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ENVIRONMENT

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Subject:
Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site
Area 3/Former Otsego Impoundment: Proposed Survey and Field Sampling Plan

Date:
August 24, 2012

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Our ref:
B0064531.00500

Dear Mr. Saric:

This letter presents a proposed survey and field sampling plan to collect soil and sediment samples in Area 3, the former Otsego Impoundment. This *Area 3/Former Otsego Impoundment Field Sampling Plan* (Area 3 Field Sampling Plan) was developed based on the preliminary sampling plan presented in the *Area 3/Former Otsego Impoundment Proposed Reconnaissance Plan and Preliminary Sampling Design* (Reconnaissance Plan; ARCADIS 2012b) approved by the United States Environmental Protection Agency (USEPA) on June 26, 2012. This Area 3 Field Sampling Plan describes modifications and refinements made to the preliminary sampling plan based on the information gathered during reconnaissance.

The goal is to commence sampling in September 2012 and we appreciate USEPA and the Michigan Department of Environmental Quality (MDEQ) working with us to achieve this schedule. A tentative start date of September 17 for field activities was communicated previously, although this is subject to postponement to obtain USEPA approval and to accommodate agency oversight staff, if necessary.

The sampling work proposed herein is part of work being done under the March 2012 *Area 3/Former Otsego Impoundment Supplemental Remedial Investigation/Feasibility Study Work Plan* (Area 3 SRI/FS Work Plan; ARCADIS 2012a) – approved by USEPA on May 10, 2012 – that describes survey activities and soil and sediment sampling designed to:

1. Document the current physical conditions of the Kalamazoo River and the river banks in Area 3 of the Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site (Site)

2. Supplement the current characterization of the nature and extent of polychlorinated biphenyl (PCB) concentrations and non-PCB constituents in sediments, river bank soils, and floodplain soils in Area 3

3. Support identification and screening of a range of potential approaches and technologies for remediation of Area 3

The Area 3 SRI/FS Work Plan (ARCADIS 2012a) identifies two investigative phases in Area 3, which lies between the Otsego City Dam and the former Otsego Dam (see Figures 1-a and 1-b), based on the iterative approach employed in Area 2 (Otsego City Impoundment). The Phase 1 activities were completed in June and July 2012 with agency oversight and included floodplain soil, sediment, and land use reconnaissance. Phase 2 will involve survey and supplemental soil and sediment sampling.

This Area 3 Field Sampling Plan summarizes Phase 1 reconnaissance activities and describes the proposed Phase 2 survey and soil and sediment sampling activities. The proposed Phase 2 sampling locations are selected based on the preliminary sampling strata identified in the Area 3 SRI/FS Work Plan (ARCADIS 2012a) that were revised following reconnaissance activities.

Field work will be performed under agency oversight by ARCADIS personnel familiar with the area and Site. Work will be performed consistent with the methods and protocols set forth in the Multi-Area guidance documents (Multi-Area Field Sampling Plan and Multi-Area Health and Safety Plan; ARCADIS BBL 2007a and b).

A summary of Phase 1 activities and components of proposed Phase 2 activities are provided in the following sections.

Area 3 Phase 1 Field Reconnaissance

Reconnaissance Activities

ARCADIS conducted field reconnaissance activities in Area 3 between June 25 and July 12, 2012 with agency oversight. As described in the Reconnaissance Plan (ARCADIS 2012b), ARCADIS conducted a preliminary study to sufficiently characterize floodplain soil strata in Area 3 (see Figures A-1a and A-1b in Attachment A) allowing a geomorphic-based soil sampling program that will provide results representative of specific strata. Soil reconnaissance activities included a site walk within the limits of the Area 3 Study Area boundary (see Figures A-1a and A-1b in Attachment A) to conduct visual assessment of vegetation types, topographic changes, land use, boundaries of previously identified strata, and collection of soil borings to inspect and describe soil types and characteristics. Reconnaissance of Kalamazoo River sediments in Area 3 included identification of sediment deposits, bank types, and collection and description of sediment cores.

During the week of June 25, reconnaissance activities were conducted at 19 sediment and 38 soil locations within Area 3. Additionally, several locations on the north and south sides of the river were visually surveyed and photographed. Bank types identified on the north and south side of the river in Area 3 are summarized in Table A-1 and identified in Figures A-2a and A-2b (Attachment A). Locations for collection of sediment cores were identified by the field crews based on the probing data and sediment characteristics observed in the field. Attachment A presents reconnaissance information collected in the field – reconnaissance core locations are presented in Figures A-1a and A-1b, bank types are identified in Figures A-2a and A-2b, and field data collected during this effort are summarized in Tables A-1 through A-5.

Additionally, on June 29 and July 11, 10 sediment cores were collected within the Pine Creek Study Area boundary, the locations for which were selected in collaboration with agency oversight (see Figures A-1a and A-1b in Attachment A). These cores were described and segmented and then archived for future analysis on July 12. A total of 67 samples were collected for potential PCB analysis and a surface sample (0 to 2 inch interval) from each core was collected for potential total organic carbon (TOC) analysis. Based on the volume of sediment available in sample depth intervals, select samples could also be analyzed for other constituents, if necessary, once any non-PCB analysis needs are identified in consultation with USEPA (see Archived Samples and Non-PCB Constituent Analysis section for more

detail). All samples were placed in jars, labeled, and retained temporarily in frozen storage. The specific samples proposed for PCB analysis are described in this Area 3 Field Sampling Plan. Data associated with Pine Creek sediment cores are provided in Tables A-3, A-5, and A-6 (Attachment A).

During reconnaissance activities, the presence or absence of grey materials and fine-grained sediments in addition to floodplain characteristics, general land use, and other physical characteristics were observed and recorded. The data collected during reconnaissance activities were used to evaluate, confirm, and/or refine the Study Area boundary, the preliminary floodplain soil strata boundaries, and preliminary sample locations identified in the Area 3 SRI/FS Work Plan (ARCADIS 2012a).

Key Reconnaissance Observations

- Coarse-grained and rocky materials are the primary materials observed upstream of the M-89 Bridge, where the water tends to be shallow and faster flowing than in the downstream impounded area. Little sediment accumulation has occurred in this upper portion of Area 3 and based on the existing PCB data, additional characterization is unwarranted. Previous remedial investigation sampling attempts in this reach have resulted in a number of planned cores being uncollectable due to lack of sediment, and where sediment was obtained, materials are predominantly coarse grained and have low PCB concentrations.

- Grey clay materials were observed at depths of up to 4.7 feet in a small area at the downstream end of the now-filled historic channel that bypassed the dam spillway and discharged between the Farmer Street Bridge and the Otsego City Dam. Samples are proposed in this area as described in the discussion of proposed Phase 2 activities.

- Downstream of the M-89 Bridge, extensive sediment deposits are present, in particular along both banks, and were found at depths up to 7 feet. Fine-grained sediments appear to be nearly continuous along the banks in this reach.

- A review of bank characteristics was conducted as part of the reconnaissance activities and nine bank types were identified within Area 3 (Table A-1 and Figures A-2a and A-2b in Attachment A). Bank types ranged from low vertical vegetated or rock-covered to steep but vegetated high banks. A number of residential properties, primarily located some distance upstream of the M-89 Bridge, were identified with mowed lawns extending to the top-of-bank. In some

instances, gray materials were identified in the bank face, as in other bank areas in this reach.

- An approximately 100-foot long sheetpile bulkhead wall is present on the north bank slightly downstream of the Cogswell Property (previously the Rock Tenn facility - see Figure A-2b in Attachment A) and several intake and outfall features are also present along the shoreline. Grey materials were observed on the opposite bank and downstream from this property.

- Observations made during the floodplain reconnaissance were generally consistent with the anticipated conditions. Fine-grained grey materials were identified in the cores collected within the former impoundment boundary downstream of the M-89 Bridge. Similar materials were also identified close to the river in the floodplain area on the south side of the river upstream of the M-89 Bridge, although these materials did not appear to extend back to the Study Area boundary in this area. In the Previous Channel 03 on the north side of the Kalamazoo River downstream of the Pine Creek outfall, a garden which had been identified by MDEQ a number of years ago was no longer present; no evidence of any gardening activity was observed.

Revisions to the Geomorphic Strata based on Reconnaissance

- During reconnaissance activities, a Terrace area was identified on the north side of ORFP-06. Therefore, the strata boundary of Terrace 3 was extended to cover the remaining portion of the Terrace area near ORFP-06 (see Figure A-1a in Attachment A).

- The strata boundary of Terrace 4 was revised to follow an elevation of 692 feet (NGVD 29) (see Figure A-1a in Attachment A).

- The Terrace (previously Terrace 5) area on the south side of Previous Channel 03 was identified as Previous Channel and therefore, it was combined with Previous Channel 03 and the terrace numbering was revised (see Figure A-1a in Attachment A).

- A channel separating Previous Channel and Terrace areas, northeast of Pine Creek, was identified between ORFP-20 and ORFP-21 and therefore, strata boundary of Previous Channel 08 was extended into Terrace 5 (see Figure A-1a in Attachment A).

- The strata boundary of Previous Channel 09 was moved closer to the river to follow the top of the berm (see Figure A-1b in Attachment A).

Adjustments to the Study Area Boundary based on Reconnaissance

As described in the Area 3 SRI/FS Work Plan (ARCADIS 2012a), the Study Area boundary was derived from the outer extent of the Federal Emergency Management Agency (FEMA) 100-year floodplain boundary, 683-foot (NGVD 29) contour, and the approximate extent of visually identified impounded areas from historical aerial photographs. The Study Area boundary was revised in certain locations based on the key features identified during field reconnaissance activities (see Figure A-3 in Attachment A).

- The Study Area boundary at Terrace 4 was adjusted to follow an elevation of 692 feet (NGVD 29) (see Figure A-1a in Attachment A).

- The Study Area boundary on the north side of the river was revised to follow an elevation of 690 feet (NGVD 29) on the top of the berm between M-89 Bridge and Previous Channel 10 (see Figure A-1b in Attachment A).

- On the south side of the river, the Study Area boundary between Previous Channel 09 (immediately upstream of the M-89 Bridge) and the Wastewater Treatment Plant was revised to follow the top of the berm from ORFP-30 to ORFP-33. The Study Area boundary was also extended to cover the floodplain area on the south side of the bank between ORFP-33 and the Wastewater Treatment Plant (see Figure A-1b in Attachment A).

- The Study Area boundary on the west side of the Cogswell Property (see Figure 1b for Cogswell parcel location) was moved closer to the river to follow an elevation of 696 feet (NGVD 29) on the berm behind ORBN-06 (see Figure A-1b in Attachment A).

- The north bank immediately downstream of Farmer Street Bridge (ORBN-31 to ORBN-32) is a high bank and therefore, the Study Area boundary was moved to be closer to the river (ORBN-30 to ORBN-32) (see Figure A-1b in Attachment A).

Area 3 Phase 2 Field Sampling Activities

This Area 3 Field Sampling Plan proposes the following activities to fulfill the objectives stated in the Area 3 SRI/FS Work Plan (ARCADIS 2012a):

- Surveying river channel transects throughout Area 3 with probing/coring of sediments at select transect locations using Lexan® tubes to collect supplemental data on sediment thickness and sediment types at seven new transects across the river and five previously surveyed United States Geological Society (USGS) transects (USGS Transect Nos. 1, 3, 5, 8, and 10) (Figures 2-a through 2-d). These transects will provide an estimated 227 samples for PCB analysis to be selected from the Lexan® core samples obtained (see Note 3 of Table 1).

- Bank profile surveying at sediment transect locations with top-of-bank sampling at select probing/coring transects to provide additional information on bank characteristics within Area 3 (Figures 3-a through 3-d).

- Main channel sediment sampling at randomly selected locations (up to eight cores) within the formerly impounded portion of Area 3 at locations between existing transects to supplement the characterization of main channel sediments upstream of the Otsego Dam to the M-89 Bridge.

- Supplemental water level readings, especially at high flow conditions to support hydrodynamic modeling and to establish flood level elevations (flood elevations are not available from FEMA for Area 3; the model will support evaluations to be conducted in the Feasibility Study).

- Revisiting established erosion pin survey locations to collect updated bank profile surveys to evaluate erosion rates since the last erosion pin surveys were conducted in 2002 (Figures 3-a through 3-d).

- Floodplain soil sampling within the identified geomorphic strata, with refinement of the boundaries based on the reconnaissance, as described above (Figures 3-a through 3-d).

- Analysis of a subset of the Pine Creek sediment core samples collected during Phase 1 to characterize sediments in the Pine Creek Impoundment.

All of the bank and soil samples submitted for laboratory analysis will be analyzed for PCBs. All of the surface samples will be analyzed for grain size and TOC. A percentage of the sediment and soil samples will be archived for potential analysis for other non-PCB constituents, as described below.

The preliminary sampling design presented in the Reconnaissance Plan (ARCADIS 2012b) included a total of 50 sediment and 90 soil sample locations (16 bank and 74 floodplain soil). Several of the proposed locations warranted modification based on the reconnaissance findings. The modified plan includes a total of 45 sediment sampling locations and 92 soil sampling locations (15 bank and 77 floodplain soil). Details of the plan and modifications to the preliminary sampling design are described below.

Proposed Top of Bank and Floodplain Soil Sampling

Bank Soil Sampling

At each end of the seven supplemental sediment probing transects that will be established and one previous USGS transect (ORT-9), a top-of-bank soil core will be collected for laboratory analysis. Exceptions include at Transect ORT-18, where one bank sample will be collected from the south side of the transect and no north bank sample is proposed due to the high elevation and steep nature of the bank. This will result in collection of 15 top-of-bank cores (10 top-of-bank cores are located within the former Otsego Impoundment). Bank soil samples will be collected from the top-of-bank (or within 30 feet of the edge of water if there is no defined top-of-bank) to refusal at the locations shown on Figures 3-a through 3-d to characterize the nature and extent of PCBs in bank soils and to supplement data used to estimate PCB loading from bank erosion. Surface samples will also be analyzed for TOC and particle size distribution.

Floodplain Soil Sampling

Floodplain sample locations have been established within geomorphic strata preliminarily defined in the Reconnaissance Plan (ARCADIS 2012b), which were refined based on reconnaissance information as described above. In addition to those refinements, the proposed floodplain soil sample locations were adjusted from those presented in the Reconnaissance Plan (ARCADIS 2012b). A list of the adjustments, which include repositioning of some samples, removal of some samples, and addition of others is described in the list below. As a result of these

adjustments, the number of proposed floodplain soil sample locations is 77 as shown on Figures 3-a through 3-d. Table 2 provides a summary of existing and proposed floodplain sample densities on a stratum and unit-by-unit basis within Area 3.

The existing samples and the proposed top-of-bank and floodplain samples together will provide a total of 92 soil sample locations in Area 3 (Table 1).

All soil samples will be initially analyzed for PCB Aroclors. Additionally, all surface soil samples will be analyzed for TOC and particle size distribution. Samples from approximately 20% of the planned soil sample locations will be archived by freezing for potential analysis of other non-PCB constituents. These samples will be randomly selected from the proposed locations such that they are evenly distributed spatially and among strata. Refer to details presented below for how decisions concerning archived samples analysis will be handled.

Soil sample location adjustments from preliminary sampling design based on reconnaissance information include:

- Two bank soil samples OTBN-04 and OTBS-04 (which were located on a high bank) were moved slightly downstream along with sediment transect ORT-04 (see Figure 3-a).

- Soil samples OFP-010 (Previous Channel 02) and OFP-011 (Previous Channel 03) were moved further away from the top-of-bank (see Figure 3-a).

- After updating the Study Area and strata boundaries of Terrace 4, soil sample OFP-012 fell outside the boundary and therefore, this sample was moved closer to the river in Terrace 4 (see Figure 3-a).

- Soil sample OFP-36 (previously OFP-039) was moved north to be within Michigan Department of Natural Resources (MDNR) property (see Figure 3-b).

- Soil sample OFP-43 (previously OFP-46) in Previous Channel 03 was moved slightly west on the MDNR property (see Figure 3-b).

Soil sample locations eliminated from preliminary sampling design based on reconnaissance information include:

- Previous soil sample OFP-030 was eliminated as it fell outside Previous Channel 05 on a steep bank within private property.

- One soil sample (previously OFP-67) between Terrace 7 and Previous Channel 08 was eliminated from the top of the berm (approximately 10 feet high).

- Bank sample OTBN-18 located on the north side of the river immediately upstream of Previous Channel 09 was eliminated from the high bank (see Figure 3-c).

- Two bank samples (previously OTBN-19 and OTBS-19) located at previous transect ORT-19 were eliminated due to the proximity of the Cogswell property (where multiple outfalls and high banks were identified) on the north bank and private property on the south bank.

- Three soil samples (previously OFP-22, OFP-27, and OFP-31) were determined to be on a former peninsula where impact is not expected due to high elevation. These samples were eliminated and samples in this area will only be collected if grey materials are observed.

Soil sample locations added to the preliminary sampling design based on reconnaissance information include:

- One new soil sample (OFP-17) was added in Previous Channel 03 (south side of OFP-16) to gather additional data from the garden area where a high PCB concentration was measured in a MDEQ soil sample (see Figure 3-a).

- Soil sample OFP-69 was added in Previous Channel 09 to increase the sample density in this feature.

- Three new soil samples (OFP-70, OFP-71, and OFP-73) were added in the extended floodplain area adjacent to Previous Channel 09 (MDNR Property) below the 683-foot elevation and one new soil sample (OFP-72) was added above the 683-foot elevation to gather additional data from this area (see Figure 3-c).

- Two new bank samples (OTBN-19 and OTBS-19) were added on the north and south banks at Previous Channel 10 (see Figure 3-c).

- Two new soil samples (OFP-76 and OFP-77) were added in Previous Channel 11 (immediately downstream of the Farmer Street Bridge) where grey fine sediments/soils were observed on the downstream end of the feature at up to 4.7 feet deep during reconnaissance activities (see Figure 3-d).

Proposed Sediment Probing and Sampling Along Transects

Supplemental sediment probing transects will be established at seven locations in the Kalamazoo River upstream of the Otsego Dam (see Figure 2-a through 2-c). Along with these seven transects, five survey transects previously established by USGS (USGS Transect Nos. 1, 3, 5, 8, and 10) will be probed and sampled to further characterize sediments in the downstream area near the Otsego Dam. These transects will be positioned approximately at the mid-point between existing PCB sampling transects to essentially double the spatial resolution of the available transect sampling data. Figures 2-a through 2-d show the locations of proposed supplemental transects as well as transects previously sampled by ARCADIS in 1993 and 1994 and transects (OCRT-45 through OCRT-48) surveyed as part of the Area 2 investigation in 2010 between the Otsego City Dam and the Farmer Street Bridge. Transects will be probed with Lexan® core tubes between the river banks, and measurements of water depth and sediment thickness will be recorded, along with a description of the sediments.

Sediment samples will also be collected from the probing cores obtained, and up to three cores per transect (some transects may only have one or two cores selected depending on the distribution of fine and course sediments at each transect) will be selected for PCB analysis for a total of approximately 36 sediment core locations. Approximately 75 percent of the cores selected for analysis will be from cores with predominantly fine-grained sediments and the remainder will be from cores classified as representing coarse-grained sediments. Samples will be selected for PCB analysis during processing activities in the field office in consultation with agency oversight personnel and submitted to the laboratory for analysis of PCB Aroclors. Surface samples from each location will be analyzed for TOC and particle size distribution. It is anticipated that cores selected for PCB analysis will include many of the near-bank locations due to presence of fine sediment and the goal of biasing the selection for PCB analysis to include 75 percent fine grained sediments. Other samples will be from cores representative of mid-channel sediments within the former impoundment, where coarser grained sediments are present.

Changes in Preliminary Sediment Probing and Sample locations based on Reconnaissance

Revisions to the preliminary sediment sampling design include additional probing/coring at four survey transects in the downstream portion of the impoundment and relocation of two probing/coring transects. These revisions are further described below.

- Four survey transects (ORT-01 through ORT-03 and ORT-06) located between the Otsego Dam and Pine Creek were changed from survey only transects to probing/coring transects (see Figure 2-a).

- One supplemental probing/coring transect (ORT-04) was moved slightly downstream to avoid the collection of a north bank sample (OTBN-04) on a high bank (see Figure 2-a).

- One supplemental probing/coring transect (ORT-19) was moved to Previous Channel 10 (see Figure 2-c) due to the proximity of the Cogswell property (where multiple outfalls and high banks were identified).

Supplemental Sediment Sampling Between Transects

The Reconnaissance Plan (ARCADIS 2012b) allowed for collection of up to 20 additional sediment cores beyond those envisioned to be collected from the supplemental transects based on the results of the reconnaissance activities. Based on a finding from reconnaissance that fine-grained sediment is present nearly continuous along the banks downstream of the M-89 Bridge, it is anticipated that the systematic transect-based sampling program will adequately characterize these materials for purposes of the SRI/FS. However, to further assess the continuity of near-shore fine-grained sediments, eight supplemental sediment cores are proposed, the locations of which will be selected in the field in collaboration with agency oversight personnel.

Samples from approximately 20% of the planned sediment sample locations will be archived by freezing for potential analysis of other non-PCB constituents. These samples will be randomly selected from the proposed locations such that they are evenly distributed spatially. Refer to details presented below for how decisions concerning archived samples analysis will be handled.

Pine Creek Sediment Cores for PCB Analysis

The reconnaissance activities included collection of 10 sediment probing cores from the Pine Creek Impoundment. These cores were described and processed for possible future analysis, and samples are currently archived in frozen storage. Six of these cores will be analyzed for PCBs. Figure A-1a and Tables A-3 and A-5 in Attachment A provide data on the cores collected during reconnaissance. The specific samples proposed for PCB and non-PCB analyses are highlighted in Table A-6 in Attachment A. This will provide a total of 45 sediment samples analyzed for PCB Aroclors from the Pine Creek Impoundment.

Proposed Survey Activities

In addition to supplemental sediment probing transects, a series of existing and new transect locations will be established for survey purposes only (i.e., transects will not be probed; see Figures 2-a through 2-d). Existing USGS transect Nos. 7, 9, 11, and 12 will be resurveyed to assess changes in top of sediment elevations. New survey transects will also be placed immediately upstream and downstream of the M-89 Bridge, the North Street Bridge, and the Farmer Street Bridge for potential use in hydraulic modeling. In addition, major features of the Otsego Dam spillway and earthen berm will be surveyed. The spillway elevation of the Pine Creek Impoundment will also be surveyed, and the spillway weir dimensions measured.

Staff Gage Installation

Two staff gages will be installed in the impoundment, one at the Otsego Dam and one at the Lincoln Road Bridge. A previous staff gage located at the Farmer Street Bridge will also be re-established to provide readings in the upstream area of the impoundment (Figures 2-a through 2-d). The water elevation at the staff gages will be regularly monitored during field activities to capture a range of flows, and flows will be measured in conjunction with staff gage readings by recording flow velocities across the river at the Farmer Street Bridge and at the Otsego Dam to provide calibration data for modeling purposes.

Bank Profile Survey

Bank profiles will be surveyed to characterize the shape and conditions of the bank at each of the supplemental sediment transect locations. Additionally, updated profiles will be surveyed at locations last surveyed in 2000 to estimate soil erosion

losses. The bank cross-sectional profile will be surveyed at a total of 22 transects on both the north and south bank for a total of 44 transects. At a minimum, the top-of-bank, slope-of-bank, and toe-of-bank under the surface of the water will be surveyed. Grade changes and at least one point beyond the top-of-bank will also be surveyed to describe the profile in sufficient detail and to reflect the general topography of the floodplain adjacent to the bank. Survey on the landward side of the bank profile will extend approximately 30 feet from top-of-bank.

Updated Survey of Erosion Pin Transects

In 2000, erosion pins were installed along transects at 10 locations (five locations along the north banks and five matching locations along the south river banks – see Figures 3-a through 3-d) in the former Otsego Impoundment to measure changes in the bank over time and estimate the rate of erosion, where observed. Erosion pin locations were re-surveyed twice a year through 2002 to document periodic changes in the bank that occurred during that time. Previous erosion pin survey locations will be re-established and surveyed in addition to the top-of-bank profile locations described above to update prior bank soil and PCB erosion rates presented in the 2003 Erosion Pin Monitoring Data Report (BBL 2003).

Sampling and Analysis Methods

Soil and sediment sampling will be performed in accordance with the methods described in the Multi-Area Field Sampling Plan (ARCADIS BBL 2007a), and consistent with the Area 3 SRI/FS Work Plan (ARCADIS 2012a). Floodplain coring aims to define the thickness of PCB-containing soils. As in the sampling conducted in Area 2, multiple core sections may be needed to accomplish this. For all core locations, the recovered core will be segmented and homogenized, and the samples split. Samples will be collected for analysis of PCB Aroclors, TOC, and particle size distribution from the appropriate intervals. All soil and sediment samples will be submitted to the laboratory for analysis of PCB Aroclors. The surface sample from each core will also be analyzed for TOC and particle size distribution.

PCB analysis will be conducted using the TestAmerica Laboratories, Inc. (TestAmerica) protocol for USEPA Method 8082 approved by USEPA in the Multi-Area Quality Assurance Project Plan (ARCADIS 2010). All sample handling and analysis will be performed in accordance with the Multi-Area Field Sampling Plan (ARCADIS BBL 2007a) and Multi-Area Quality Assurance Project Plan (ARCADIS 2010).

The process for selection of archived samples for non-PCB constituent analysis is described below.

Archived Samples and Non-PCB Constituent Analysis

Sampling and analysis for non-PCB constituents has been included as part of Supplemental Investigation activities, beginning with Area 1, where soil and sediment samples were collected to supplement historical samples that were analyzed for 142 other constituents – both organic and inorganic. The available data in Area 1, along with other available Site-wide data, were presented in the Area 1 Supplemental Remedial Investigation Report (ARCADIS 2012c) and screened against relevant criteria or screening values and evaluated for co-occurrence with PCBs. That evaluation identified a sub-set of constituents that were detected with greater than 10 percent frequency, which exceeded the criteria/screening values used for evaluation activities and which were observed to be co-occurring and correlated to an extent with PCB concentrations due to similar association with fine-grained sediments.

The assessment of non-PCB constituents in Area 1 was supplemented with additional data recently obtained from investigations in Area 2, as well as recently received long term monitoring data from MDEQ. Samples were collected and analyzed for those constituents to provide data from across the extent of Area 2, and from samples representing a wide range of soil and sediment PCB concentrations. The locations analyzed were selected from among a group of archived split samples which were initially analyzed for PCBs. The initial analysis of all of the samples for which splits were archived also included mercury and specific volatile organic compounds (VOCs) due to hold time limitations for those constituents. The Area 2 data are now being reviewed together with the existing Area 1 data to provide a more complete assessment of which non-PCB constituents may warrant inclusion in future soil and sediment investigation activities in Area 3 and downstream areas. The result of that assessment is expected to guide a determination of whether any specific non-PCB constituents warrant continued sampling and analysis as part of SRI activities. In the interim to that determination, a contingent split sample archiving strategy similar to that utilized in Area 2 is proposed for Area 3 – with the exception that the analysis of mercury will be excluded, as described below.

A review of the mercury results presented in Attachment B supports elimination of mercury from the constituent list for analysis, which reduces the need for analysis of samples for mercury coincident with PCB analysis due to hold time limitations for mercury. USEPA guidance on hold times for mercury and VOCs required that the

Area 2 samples were initially analyzed for these, while other non-PCB analyses were performed on archive samples later after review of the PCB results. Due to mercury being reported with other metals, two sets of mercury results were actually obtained for the Area 2 samples – the initial result, and then the subsequent result when samples were analyzed for all of the metals included. Results were highly correlated as shown in Figure B-1.

Mercury is frequently detected above screening values; however, correlation plots show that the higher concentrations of mercury occur across the range of observed PCB concentrations. Sediments and soils with higher PCB concentrations tend to contain relatively elevated mercury concentrations – likely due to preferential accumulation of fine grained sediments. It is well established that atmospheric deposition of mercury from many sources is an ongoing impairment to surface water systems, including in the State of Michigan. Figure B-2 in Attachment B presents the mercury concentrations in whole body carp from Michigan's State-wide fish tissue contaminant monitoring program in comparison to PCB concentrations, which shows that mercury concentrations have been less variable and more slowly declining than PCB concentrations. The historical presence of sources of mercury unassociated with PCBs may also explain why higher levels of mercury occur across the range of PCB concentrations – the higher concentrations of mercury occur at very low PCB concentrations as well as the higher PCB concentrations. The findings indicate that primary sources of mercury are not associated with PCBs and are continuing, and that mercury and PCB concentrations are not correlated.

USEPA guidelines suggest a 14-day holding time for VOC analysis (with or without freezing). For purposes of this sampling plan ARCADIS proposes a holding time of up to 60 days to allow for selection of samples to be analyzed based on PCB results, and proposes the following approach towards non-PCB analysis:

- Additional material will be collected in the first week of field activities from 20% of the proposed sediment and soil sample locations (approximately 27 locations) for potential further non-PCB analysis.

- PCB samples will be sent to TestAmerica, who will perform all needed analyses.

- Priority will be given for PCB analysis and validation to those samples for which archived split samples are being held for non-PCB analysis.

- Once PCB results are received, 30 samples will be selected from the approximately 140 archived samples for analysis, representing a range of PCB results and a request for approval of this selection and an associated constituents list for analysis will be sent to USEPA and MDEQ.

Every effort will be made to complete non-PCB analysis within a 60 day period; however, this will be contingent on receipt of PCB results from the lab and identification of samples for non-PCB analysis, and the constituent list for analysis in consultation with USEPA.

Summary of Proposed Field Sampling Program

A summary of the proposed sampling program in Area 3 is provided in Table 1.

Schedule

ARCADIS will schedule and initiate survey and sampling activities in collaboration with agency personnel following approval of this plan from USEPA and MDEQ. Surveying and field sampling activities are proposed to start during the week of September 17, 2012, subject to availability of agency oversight personnel, obtaining any access agreements, and river flow and weather conditions. Our goal is to complete all field work by mid-October 2012 and to receive laboratory results for submitted samples by December 2012. Any remaining sampling needs will be identified after review of results.

Sincerely,
ARCADIS

Michael J. Erickson, P.E.
Vice President

Copies:
Paul Bucholtz, MDEQ
Jeff Keiser, CH2M HILL
Garry Griffith, P.E., Georgia-Pacific, LLC
Mark Brown, Ph.D., Waterviews, LLC

References:

ARCADIS. 2010. *Multi-Area Quality Assurance Project Plan for the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site*. March 2010.

ARCADIS. 2012a. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Area 3/Otsego Impoundment Supplemental Remedial Investigation/ Feasibility Study Work Plan.* March 2012.

ARCADIS. 2012b. *Area 3/Former Otsego Impoundment Proposed Reconnaissance Plan and Preliminary Sampling Design*. June 2012.

ARCADIS. 2012c. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Area 1 Supplemental Remedial Investigation Report.* August 2012

ARCADIS BBL. 2007a. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Multi-Area Field Sampling Plan*. October 2007.

ARCADIS BBL. 2007b. *Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Multi-Area Health and Safety Plan*. May 2007.

BBL. 2003. *Erosion Pin Monitoring Data Report*. March 2003

Enclosures:

Table 1	Summary of Proposed Survey and Sampling Activities
Table 2	Summary of Existing and Proposed Sample Densities by Strata
Figures 1a-b	Tax Parcels Related to Area 3
Figures 2a-d	Proposed Sediment Investigation for Area 3
Figures 3a-d	Proposed Bank and Floodplain Soil Investigation for Area 3
Attachment A	Data from Field Reconnaissance
Attachment B	Mercury Data

ARCADIS

Tables

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan

Table 1 - Summary of Proposed Survey and Sampling Activities

Field Activity	Description	Number of Locations	Location ID	Sample Intervals	Number of Samples	Analyses
Survey	Bank Profiles - Detailed bank profiles from past the top-of-bank to the bottom of the river, survey at both locations along south and north sides of the main channel of the river.	44	OTBS-1 through OTBS-22 OTBN-1 through OTBN-22	NA	NA	NA
	River Transects - Establish 7 new probing/coring transects within the Otsego Impoundment and probe sediment at 8 to 10 points along transect including both edge-of-waters for sediment depth. Establish 5 new survey transects. 5 previous USGS transects will be probed/cored. 5 other transects will be surveyed only.	22	ORT-1 through ORT-22	NA	NA	NA
Soil Sampling[1, 5]	Top-of-Bank Sampling - Collect a soil core at the top of the bank at selected bank profiles[2].	15	OTBS-1 through OTBS-22 OTBN-1 through OTBN-22	0- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12-inch increments	80	PCB (all samples), particle size and TOC (surface only)
	Floodplain Sampling - floodplain soil samples will be collected from locations to spatially represent the different geomorphic strata and other specific floodplain feature between Otsego City Dam and Lincoln Road/M-89 Bridge (the former channel near the dam, the residential area of the floodplain.	77	OFP-01 through OFP-77	0- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12 inch increments	405	PCB (all samples), particle size and TOC (surface only)
Sediment[3, 5]	Sediment Sampling - 2-3 sediment cores from 12 probing transect will be submitted for analysis. This will include a core near shore and in the mid-channel[4]. Additional samples may be collected from identified sediment deposits in the impoundment (up to 8 locations)	45	OSED-11 through OSED-55	0- to 2-inch, 2- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12 inch increments	285	PCB (all samples), TOC and particle size (surface only)
	Samples from 6 sediment cores collected from the Pine Creek Dam area during reconnaissance will be submitted for PCB and non-PCB analyses[6.]	6	OSED-01 through OSED-10	0- to 2-inch, 2- to 6-inch, 6- to 12-inch, 12- to 24-inch, 12 inch increments	45	PCB (all samples), TOC and particle size (surface only)
Hydraulic Monitoring	Staff Gage - Establish 2 temporary staff gages. Monitor and record river stage over a range of flow conditions during other sampling activities.	3	OSG-1, OSG-2, OSG-3	NA	≥10	NA
	Flow measurements - Periodically measure flow at the staff gages over a range of flow conditions and water elevations.	3	OSG-1, OSG-2, OSG-3	NA	≥10	NA
Erosion Pin Survey	Previous erosion pin survey locations (originally surveyed in 2000) will be reoccupied, surveyed, and monitored on a seasonal basis to develop bank soil and PCB erosion rates for the 10-year intercedent period.	10	OEP-1 through OEP-5	NA	NA	NA

Notes:

1. Bank and floodplain soil samples based on an average 5 samples per core (average depth of 48 inches) plus duplicates (1 duplicate sample per 20 samples).
2. Bank samples will be collected only from the 8 sediment probing/coring transects (except OTBN-18). The location ID will be consistent with the bank profile ID.
3. Sediment samples based on an average 6 samples per core (average depth of 48 inches) plus duplicates (1 duplicate sample per 20 samples).
4. Sediment samples will be collected from probing/coring transects and location ID will be consistent with the transect ID.
5. Soil and sediment samples will be analyzed for non-PCB constituents as outlined in this Area 3 Field Sampling Plan.
6. Samples from OSED-01, OSED-02, OSED-05, OSED-06, OSED-08, and OSED-10 collected in June and July 2012 will be submitted for analysis.

NA = Not applicable
PCB = polychlorinated biphenyls
TOC = total organic carbon
USGS = United States Geological Survey

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan

Table 2 - Summary of Existing and Proposed Sample Densities by Strata

Geomorphic Unit ID	Geomorphic Unit Classification	Area (acres)	Existing Sample Locations[1]	Proposed Sample Locations	Total Sample Locations	Existing Density (core/acre)	Proposed Density (core/acre)	Total Density (core/acre)
	Outside Geomorphic Units - Islands	1.1	0	0	0	0.00	0.00	0.00
	Outside Geomorphic Units - North Bank Downstream of Lincoln Road/M-89 Bridge	8.0	3	0	3	0.38	0.00	0.38
	Outside Geomorphic Units - North Bank Upstream of Lincoln Road/M-89 Bridge	7.9	0	1	1	0.00	0.13	0.13
	Outside Geomorphic Units - Pine Creek Area	29.2	0	0	0	0.00	0.00	0.00
	Outside Geomorphic Units - South Bank Downstream of Lincoln Road/M-89 Bridge	22.7	13	0	13	0.57	0.00	0.57
	Outside Geomorphic Units - South Bank Upstream of Lincoln Road/M-89 Bridge	37.3	0	5	5	0.00	0.13	0.13
PC01	Previous Channel	1.5	1	1	2	0.67	0.67	1.33
PC02	Previous Channel	7.8	8	9	17	1.02	1.15	2.17
PC03	Previous Channel	29.9	9	20	29	0.30	0.67	0.97
PC04	Previous Channel	5.5	0	5	5	0.00	0.92	0.92
PC05	Previous Channel	7.4	1	8	9	0.13	1.08	1.21
PC06	Previous Channel	3.1	2	4	6	0.65	1.31	1.96
PC07	Previous Channel	2.2	1	3	4	0.46	1.38	1.84
PC08	Previous Channel	10.1	5	9	14	0.50	0.89	1.39
PC09	Previous Channel	2.1	0	3	3	0.00	1.40	1.40
PC10	Previous Channel	0.7	0	3	3	0.00	4.13	4.13
PC11	Previous Channel	5.6	0	2	2	0.00	0.36	0.36
T1	Terrace	1.04	1	0	1	0.96	0.00	0.96
T2	Terrace	0.31	0	1	1	0.00	3.23	3.23
T3	Terrace	2.32	3	1	4	1.29	0.43	1.72
T4	Terrace	0.97	1	2	3	1.03	2.06	3.10
T5	Terrace	3.92	0	5	5	0.00	1.28	1.28
T6	Terrace	5.54	1	7	8	0.18	1.26	1.44
T7	Terrace	3.12	1	3	4	0.32	0.96	1.28
	Total Area 3	199.2	50	92	142	0.25	0.46	0.71
	Area 3 - Downstream of Lincoln Road/M-89 Bridge	115.3	50	78	128	0.43	0.68	**1.11**
	Previous Channel	75.9	27	67	94	0.36	0.88	**1.24**
	Terrace	17.2	7	19	26	0.41	1.10	**1.51**

Notes:

1. Sample count includes soil samples collected during 1993 Floodplain Investigation, 1993/1994 Former Impoundment Sediment Investigation, and 2000 Focused Sediment Sampling.

ARCADIS

Figures

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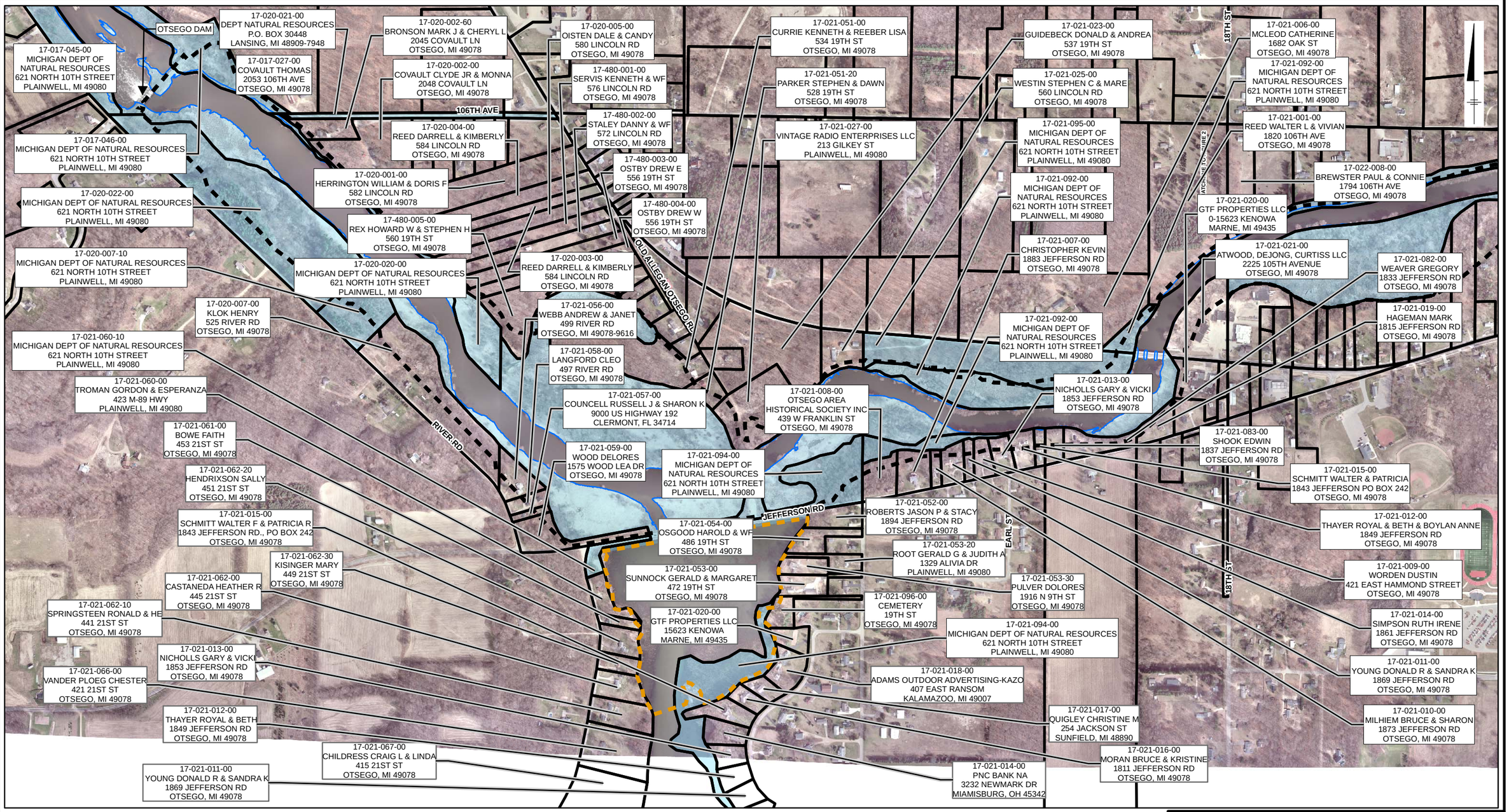

LEGEND:

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PARCEL BOUNDARY
- SHORELINE
- APPROXIMATE AREA OWNED BY MDNR
- APPROXIMATE AREA OWNED BY CITY OF OTSEGO

NOTES:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.
2. PARCEL BOUNDARIES PROVIDED BY ALLEGAN COUNTY.
3. LAND ADJACENT TO RIVER, NOT IDENTIFIED BY ALLEGAN COUNTY, ASSUMED TO BE OWNED BY MDNR.

17-021-059-00 — TAX PARCEL ID
WOOD DELORES — OWNER NAME (LAST NAME, FIRST NAME)
1575 WOOD LEA DR — OWNER STREET ADDRESS
OTSEGO, MI 49078 — OWNER CITY, STATE & ZIP CODE

0 700 1,400 Feet
GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

TAX PARCELS RELATED TO AREA 3

ARCADIS

FIGURE 1-a

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\Otsego\CityDam\TrOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Parcels_Otsego_West.mxd 8/21/2012 11:53:24 AM

DRAFT

17-022-003-00
BIGELOW MICHAEL K
1750 106TH AVE
OTSEGO, MI 49078

17-022-005-00
VANMEER CORPORATION
1754 106TH ST
OTSEGO, MI 49078

17-022-004-00
BREWSTER LEWIS & CAROL
1794 106TH AVE
OTSEGO, MI 49078

17-022-006-00
GILLILAND DARL L
1772 106TH AVE
OTSEGO, MI 49078

17-022-007-00
NICKERSON WILLIAM & MARJORIE
1768 106TH AVE
OTSEGO, MI 49078

17-022-026-00
REISING SCOTT E & VICKY D
731 NICHOLSON ST
OTSEGO, MI 49078

17-022-025-00
DEJONG ROBERT &ATWOOD DENISE
2225 105TH AVE
OTSEGO, MI 49078-9663

17-022-002-10
KIBLER GEORGE & CHARLINE TRUST
2525 WEST F AVE
KALAMAZOO, MI 49009

17-022-002-00
MORGAN MICHAEL & DIANE
1236 111TH AVE
MARTIN, MI 49070

17-022-065-00
MICHIGAN DEPT OF
NATURAL RESOURCES
621 NORTH 10TH STREET
PLAINWELL, MI 49080

17-022-001-00
HUYCK PENNY
1736 106TH AVE
OTSEGO, MI 49078

17-022-065-00
MICHIGAN DEPT OF
NATURAL RESOURCES
621 NORTH 10TH STREET
PLAINWELL, MI 49080

54-022-196-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-022-029-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-150-009-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-150-008-00
ROBIDOUX DALE F & DOROTHY
518 WATER ST
OTSEGO, MI 49078

54-150-007-00
PECKENS VERNON
510 WATER ST
OTSEGO, MI 49078

54-022-039-00
DETTMANN JONATHAN
506 WATER ST
OTSEGO, MI 49078

54-022-040-00
MARLOW CHARLES E & SHARON L
24600 31ST ST
GOBLES, MI 49055-8702

54-022-041-11
LICK STEVEN J
438 W WATER
OTSEGO, MI 49078

54-022-042-10
JONES DANNY
434 WATER
OTSEGO, MI 49078

54-022-044-00
KNIGHT DARYL & KATHY
420 W ALLEGAN ST
OTSEGO, MI 49078

54-022-045-00
BRONSON ELWIN & VIRGINIA
404 W ALLEGAN ST
OTSEGO, MI 49078

54-250-047-00
ROBINSON WILLIAM & PATRICIA
12007 OAKRIDGE RD P O BOX 493
PLAINWELL, MI 49080

54-022-003-00
ROBINSON WILLIAM & PATRICIA
12007 OAKRIDGE RD , P O BOX 493
PLAINWELL, MI 49080

54-022-005-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-023-041-00
CRONEN LYNDON L & CARMEN L
5180 GRAND ARBRE TRAIL
KALAMAZOO, MI 49009

54-022-006-10
SCHANZ MARION & SHIRLEY
3089 102ND AVE
ALLEGAN, MI 49010

54-015-006-00
COGSWELL PROPERTY LLC
PO BOX 363
OTSEGO, MI 49078

54-202-005-00
MEAD KYLE V
205 N MAIN ST
OTSEGO, MI 49078

54-022-007-00
BRONSON JOSEPH P & KECIA P
378 W ALLEGAN
OTSEGO, MI 49078

54-250-034-50
CITY OF OTSEGO
117 ORLEANS ST
OTSEGO, MI 49078

54-100-001-00
WASHOUT LLC
3313 STADIUM DR
KALAMAZOO, MI 49008

54-500-009-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-023-030-00
OTSEGO PAPER INC
320 N FARMER ST
OTSEGO, MI 49078

54-500-012-00
CITY OF OTSEGO
117 E ORLEANS ST
OTSEGO, MI 49078

54-101-010-70
HAUGH RICHARD W & JUDITH K
1418 HILLCREST DR
HOPKINS, MI 49328

54-250-034-00
CITY OF OTSEGO
117 ORLEANS ST
OTSEGO, MI 49078

54-023-030-00
OTSEGO PAPER INC
320 N FARMER ST
OTSEGO, MI 49078

54-023-033-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-023-040-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-201-001-00
CRONEN GERENE
256 W ALLEGAN ST
OTSEGO, MI 49078

54-201-002-00
STEELE DALAURA
260 W WATER ST
OTSEGO, MI 49078

54-201-003-00
LAKEMAN EARL & MARGIE LIFE
673 BROOKSIDE APT 2
OTSEGO, MI 49078

54-201-004-00
MOSS BONNIE J
9625 MARSH RD
PLAINWELL, MI 49080

54-202-007-00
WRIGHT JEFFREY T & JENNIFER
308 WATER ST
OTSEGO, MI 49078

54-202-008-50
THOMAS ROBERT D & WF
324 WATER
OTSEGO, MI 49078

54-022-025-00
THOMAS ROBERT D & WF
324 WATER
OTSEGO, MI 49078

54-022-008-00
THOMPSON JOEL M
217 KALAMAZOO
OTSEGO, MI 49078

54-022-009-00
ADAMS TODD S & MARTHA A
669 GLENVIEW CIRCLE
PLAINWELL, MI 49080

54-022-013-00
TOWN RAYMOND TRUST
354 WATER ST
OTSEGO, MI 49078

54-022-014-00
TOWN RAYMOND TRUST
354 WATER ST
OTSEGO, MI 49078

54-022-012-00
MARTENS JOHN
346 W WATER ST
OTSEGO, MI 49078

54-022-023-00
HARRIS DONALD JR
334 W WATER ST
OTSEGO, MI 49078

54-101-006-00
ST MARGARETS PARRISH
245 COURT
OTSEGO, MI 49078

54-023-042-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-100-115-00
CITY OF OTSEGO
117 E ORLEANS
OTSEGO, MI 49078

54-250-034-20
CITY OF OTSEGO
117 ORLEANS ST
OTSEGO, MI 49078

54-500-011-00
DUSSIA JOHN O & CASIE LYNN
228 JEWELL ST
OTSEGO, MI 49078

54-023-039-00
MILLASSIST SERVICES INC
141 N FARMER
OTSEGO, MI 49078

54-500-006-00
LIVINGSTON ROBERT D
228 JEWELL ST
OTSEGO, MI 49078

E RIVER ST
106TH AVE
LINCOLN RD
JEFFERSON RD
MATCHLINE TO FIGURE 1
SHERWOOD ST
E FRANKLIN ST
WATSON RD
FLORENCE ST
HILLCREST AVE
W ALLEGAN ST
E ALLEGAN ST
OTSEGO CITY DAM
COURT ST
N WILMOT ST
E ORLEANS ST
W FRANKLIN ST

LEGEND:

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PARCEL BOUNDARY
- SHORELINE
- APPROXIMATE AREA OWNED BY CITY OF OTSEGO
- APPROXIMATE AREA OWNED BY MDNR

NOTES:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.
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17-021-059-00 — TAX PARCEL ID
WOOD, DELORES — OWNER NAME (LAST NAME, FIRST NAME)
1575 WOOD LEA DR — OWNER STREET ADDRESS
OTSEGO, MI 49078 — OWNER CITY, STATE & ZIP CODE

0 700 1,400 Feet
GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

TAX PARCELS RELATED TO AREA 3

ARCADIS

FIGURE
1-b

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\OtsegoCityDamToOtsegoDamPreDesignInvestigationSamplingPlan\mxd\Parcels_Otsego_East.mxd 8/21/2012 11:55:55 AM

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OTSEGO DAM

OSG-01

ORT-01

KPT-94

ORT-02

KPT-93

ORT-03

ORT-04

KPT-92

ORT-05

KPT-91

ORT-06

ORT-07

MATCHLINE (2-a/2-b)

NOTES:

1. PROPOSED SURVEY TRANSECTS WILL SURVEY TOP OF SEDIMENT ONLY.
2. SEDIMENT PROBING WILL ESTABLISH APPROXIMATELY 10 CORE LOCATIONS PER TRANSECT. A SUBSET OF THESE CORES (2-3 LOCATIONS PER TRANSECT) WILL BE SUBMITTED FOR LABORATORY ANALYSIS.
3. SEDIMENT CORES WERE COLLECTED IN PINE CREEK DURING RECONNAISSANCE ACTIVITIES. CORES WERE PROCESSED AND SAMPLES ARCHIVED FOR SUBSEQUENT ANALYSIS.

LEGEND:

- SEDIMENT SAMPLE LOCATION (COLLECTED JULY 2012)
- STAFF GAGE LOCATION (APPROXIMATE)
- PROPOSED SURVEY TRANSECT
- PROPOSED SEDIMENT PROBE/CORING TRANSECT
- EXISTING USGS TRANSECT TO BE REOCCUPIED
- EXISTING ARCADIS 1993 SEDIMENT PROBE TRANSECT
- 2010 SEDIMENT PROBE TRANSECT (PERFORMED DURING AREA 2 INVESTIGATION)

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SEDIMENT SAMPLE LOCATION

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED SEDIMENT INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 2-a

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
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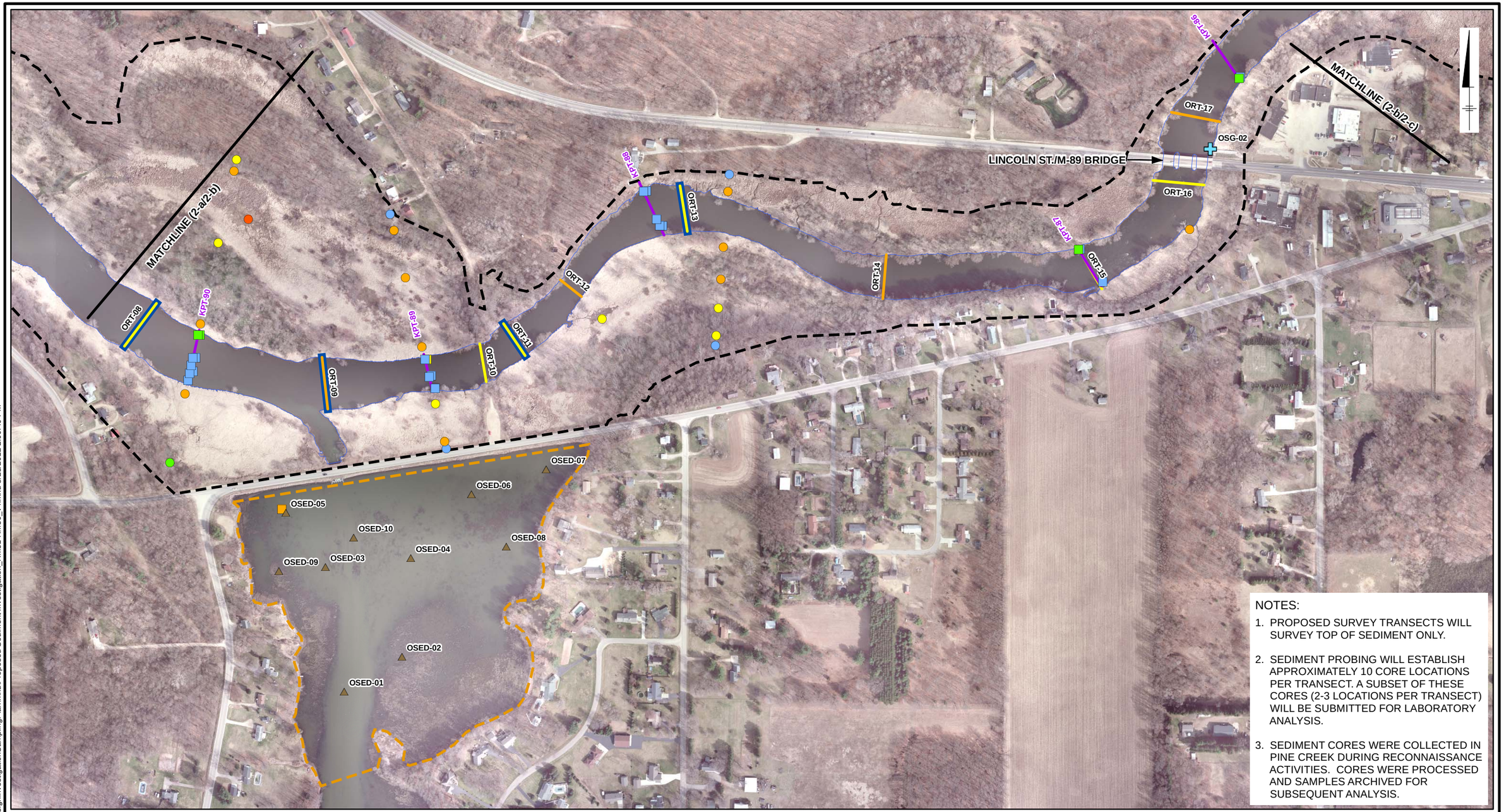
DRAFT



NOTES:

1. PROPOSED SURVEY TRANSECTS WILL SURVEY TOP OF SEDIMENT ONLY.
2. SEDIMENT PROBING WILL ESTABLISH APPROXIMATELY 10 CORE LOCATIONS PER TRANSECT. A SUBSET OF THESE CORES (2-3 LOCATIONS PER TRANSECT) WILL BE SUBMITTED FOR LABORATORY ANALYSIS.
3. SEDIMENT CORES WERE COLLECTED IN PINE CREEK DURING RECONNAISSANCE ACTIVITIES. CORES WERE PROCESSED AND SAMPLES ARCHIVED FOR SUBSEQUENT ANALYSIS.

LEGEND:

- SEDIMENT SAMPLE LOCATION (COLLECTED JULY 2012)
- STAFF GAGE LOCATION (APPROXIMATE)
- PROPOSED SURVEY TRANSECT
- PROPOSED SEDIMENT PROBE/CORING TRANSECT
- EXISTING USGS TRANSECT TO BE REOCCUPIED
- EXISTING ARCADIS 1993 SEDIMENT PROBE TRANSECT
- 2010 SEDIMENT PROBE TRANSECT (PERFORMED DURING AREA 2 INVESTIGATION)

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SEDIMENT SAMPLE LOCATION

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED SEDIMENT INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 2-b

City: SYR DivGroup: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCityDam\OtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sediment Investigation_RM51-RM50_v4.mxd 8/23/2012 2:00:40 PM

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NOTES:

1. PROPOSED SURVEY TRANSECTS WILL SURVEY TOP OF SEDIMENT ONLY.
2. SEDIMENT PROBING WILL ESTABLISH APPROXIMATELY 10 CORE LOCATIONS PER TRANSECT. A SUBSET OF THESE CORES (2-3 LOCATIONS PER TRANSECT) WILL BE SUBMITTED FOR LABORATORY ANALYSIS.
3. SEDIMENT CORES WERE COLLECTED IN PINE CREEK DURING RECONNAISSANCE ACTIVITIES. CORES WERE PROCESSED AND SAMPLES ARCHIVED FOR SUBSEQUENT ANALYSIS.

LEGEND:

- SEDIMENT SAMPLE LOCATION (COLLECTED JULY 2012)
- STAFF GAGE LOCATION (APPROXIMATE)
- PROPOSED SURVEY TRANSECT
- PROPOSED SEDIMENT PROBE/CORING TRANSECT
- EXISTING USGS TRANSECT TO BE REOCCUPIED
- EXISTING ARCADIS 1993 SEDIMENT PROBE TRANSECT
- 2010 SEDIMENT PROBE TRANSECT (PERFORMED DURING AREA 2 INVESTIGATION)

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SEDIMENT SAMPLE LOCATION

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

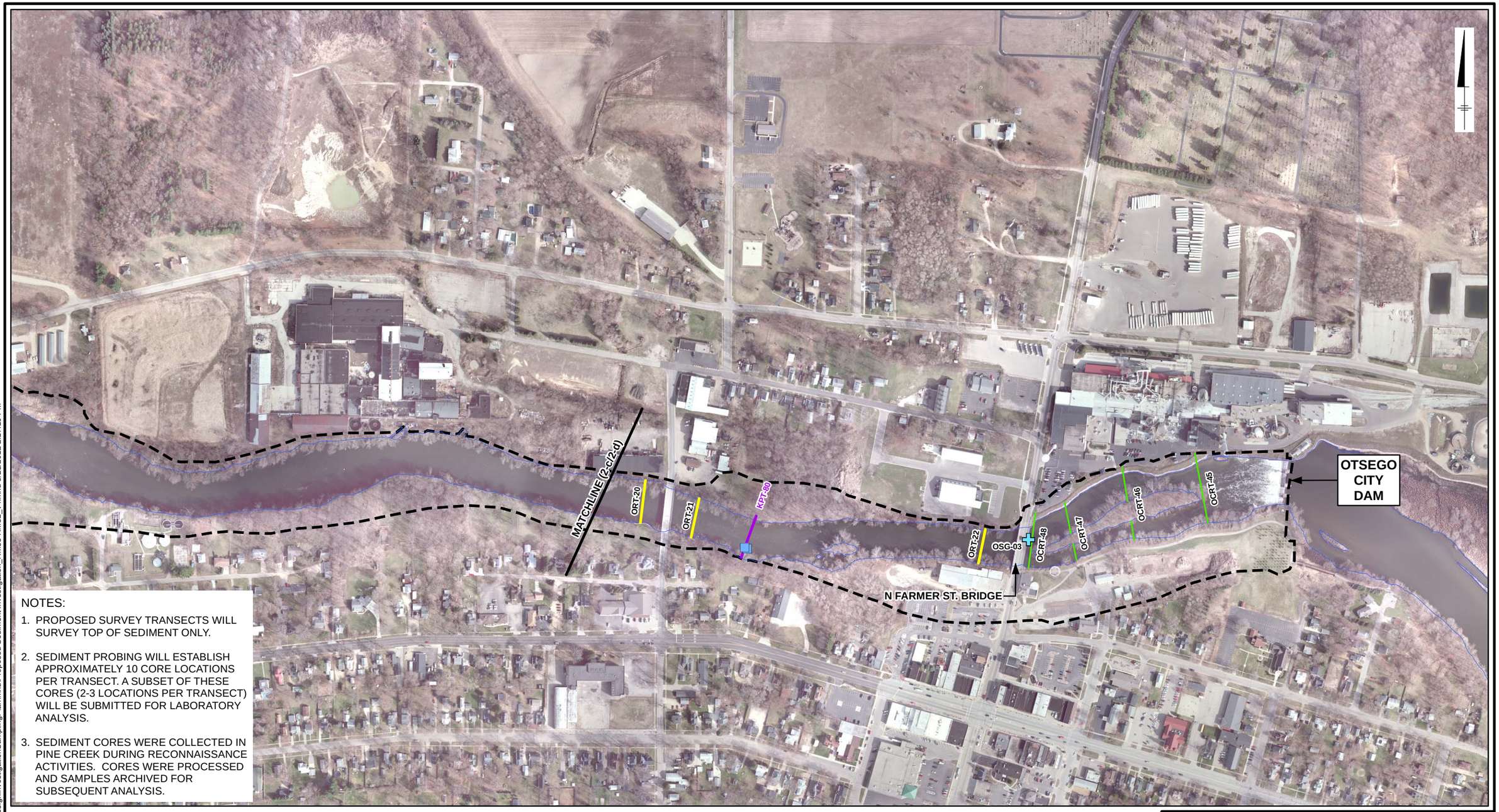
PROPOSED SEDIMENT INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 2-c

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCityDamToOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sediment Investigation_RM52-RM51_v4.mxd 8/23/2012 2:12:32 PM

DRAFT



NOTES:

1. PROPOSED SURVEY TRANSECTS WILL SURVEY TOP OF SEDIMENT ONLY.
2. SEDIMENT PROBING WILL ESTABLISH APPROXIMATELY 10 CORE LOCATIONS PER TRANSECT. A SUBSET OF THESE CORES (2-3 LOCATIONS PER TRANSECT) WILL BE SUBMITTED FOR LABORATORY ANALYSIS.
3. SEDIMENT CORES WERE COLLECTED IN PINE CREEK DURING RECONNAISSANCE ACTIVITIES. CORES WERE PROCESSED AND SAMPLES ARCHIVED FOR SUBSEQUENT ANALYSIS.

LEGEND:

- SEDIMENT SAMPLE LOCATION (COLLECTED JULY 2012)
- STAFF GAGE LOCATION (APPROXIMATE)
- PROPOSED SURVEY TRANSECT
- PROPOSED SEDIMENT PROBE/CORING TRANSECT
- EXISTING USGS TRANSECT TO BE REOCCUPIED
- EXISTING ARCADIS 1993 SEDIMENT PROBE TRANSECT
- 2010 SEDIMENT PROBE TRANSECT (PERFORMED DURING AREA 2 INVESTIGATION)

MAXIMUM SEDIMENT PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SEDIMENT SAMPLE LOCATION

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION

- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED SEDIMENT INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 2-d

City: SYR Div/Group: 90 Created By: Srut Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCityDam\ToOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sediment Investigation_RM53-RM52_v4.mxd 8/23/2012 2:17:10 PM

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OTSEGO DAM

OSG-01

OTBS-01

OTBN-01

OTBN-02

OTBS-02

OTBN-03

OTBS-03

OTBN-04

OTBS-04

OTBN-05

OTBS-05

OTBN-06

OTBS-06

OTBN-07

OTBS-07

T1

T2

T3

T4

PC01

PC02

PC03

PC04

PC08

OFP-001

OFP-002

OFP-003

OFP-004

OFP-005

OFP-006

OFP-007

OFP-008

OFP-009

OFP-010

OFP-011

OFP-012

OFP-013

OFP-014

OFP-015

OFP-016

OFP-017

OFP-018

OFP-019

OFP-020

OFP-021

OFP-022

OFP-024

OFP-025

MATCHLINE (3-a/3-b)

LEGEND:

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION
- EXISTING EROSION PIN LOCATION
- PROPOSED FLOODPLAIN SOIL SAMPLE LOCATION
- PROPOSED BANK PROFILE LOCATION
- EXISTING STAFF GAGE LOCATION (APPROXIMATE)
- UPLAND TOPOGRAPHIC CONTOUR (1 FT)
- APPROXIMATE AREA OWNED BY MDNR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)
- PREVIOUS CHANNEL
- TERRACE

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED BANK AND FLOODPLAIN SOIL INVESTIGATION FOR AREA 3

ARCADIS

FIGURE
3-a

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCity\DamToOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sample Locations - Floodplain Soil - RM50-RM49_v6.mxd 8/24/2012 3:43:09 PM

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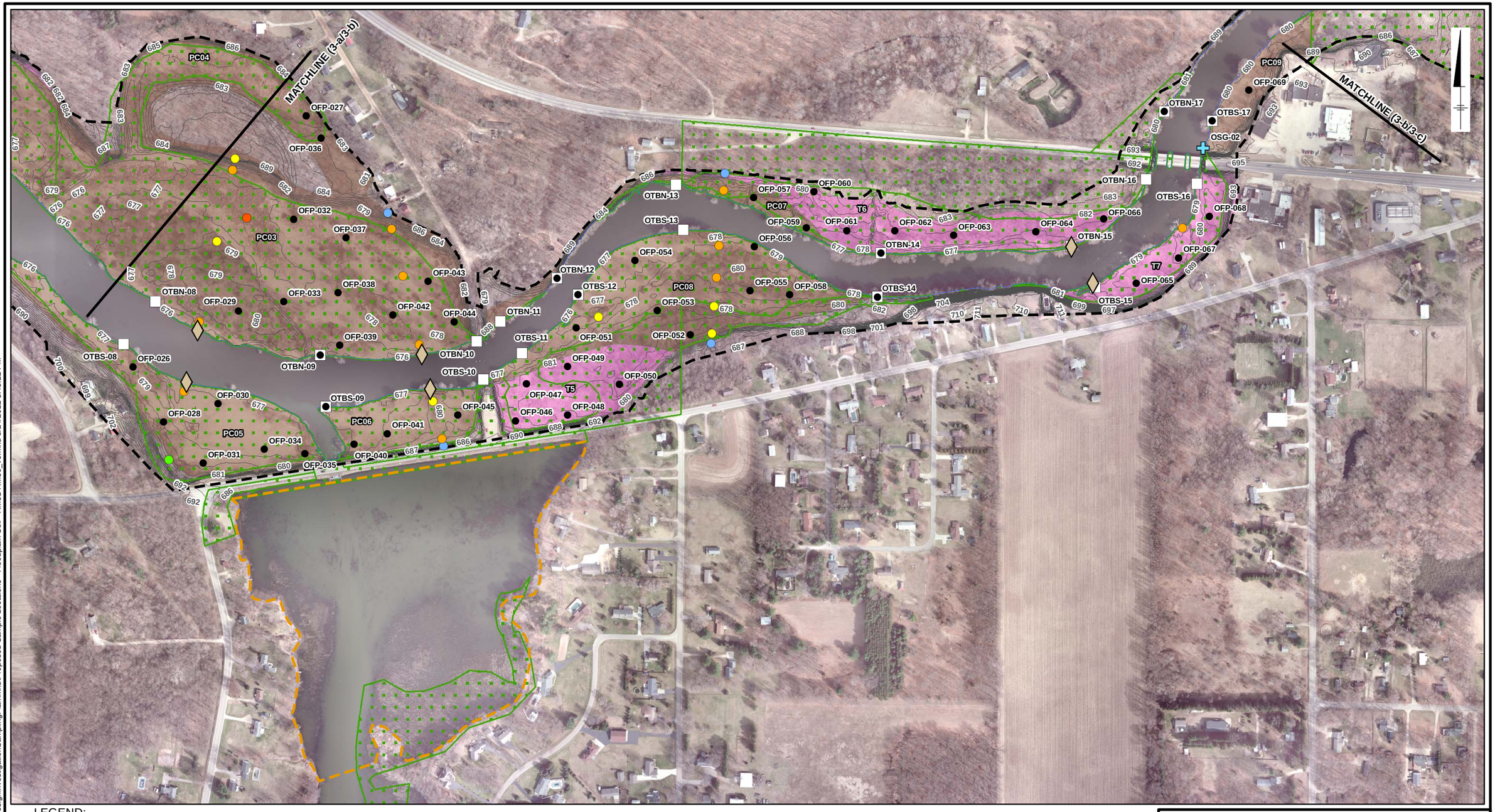

LEGEND:

MAXIMUM SOIL

PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION
- EXISTING EROSION PIN LOCATION
- PROPOSED FLOODPLAIN SOIL SAMPLE LOCATION
- PROPOSED BANK PROFILE LOCATION
- EXISTING STAFF GAGE LOCATION (APPROXIMATE)
- UPLAND TOPOGRAPHIC CONTOUR (1 FT)
- APPROXIMATE AREA OWNED BY MDNR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)
- PREVIOUS CHANNEL
- TERRACE

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED BANK AND FLOODPLAIN SOIL INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 3-b

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCity\Dam\ToOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sample Locations - Floodplain Soil - RM51-RM50_v6.mxd 8/24/2012 3:48:22 PM

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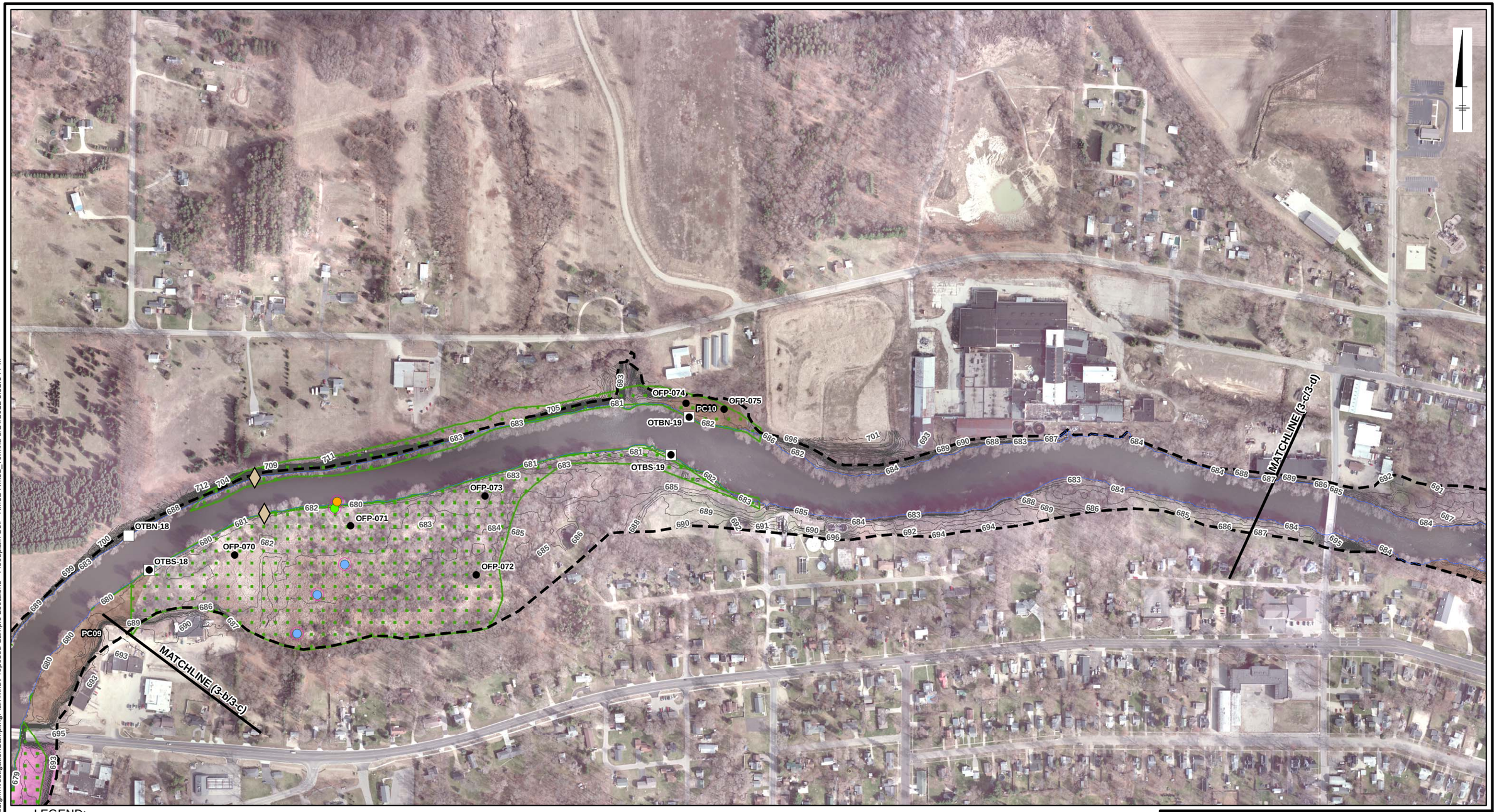

LEGEND:

MAXIMUM SOIL PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION
- EXISTING EROSION PIN LOCATION
- PROPOSED FLOODPLAIN SOIL SAMPLE LOCATION
- PROPOSED BANK PROFILE LOCATION
- EXISTING STAFF GAGE LOCATION (APPROXIMATE)
- UPLAND TOPOGRAPHIC CONTOUR (1 FT)
- APPROXIMATE AREA OWNED BY MDNR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)
- PREVIOUS CHANNEL
- TERRACE

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED BANK AND FLOODPLAIN SOIL INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 3-c

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0003.00500)
Q:\KRSG\OtsegoCityDamToOtsegoDamPreDesignInvestigationSamplingPlan\mxd\Proposed Sample Locations - Floodplain Soil - RM52-RM51_v6.mxd 8/24/2012 3:51:34 PM

DRAFT

LEGEND:

MAXIMUM SOIL

PCB RESULTS (MG/KG):

- ND - 1
- 1 - 5
- 5 - 10
- 10 - 50
- > 50
- MDEQ SOIL SAMPLE LOCATION
- EXISTING EROSION PIN LOCATION
- PROPOSED FLOODPLAIN SOIL SAMPLE LOCATION
- PROPOSED BANK PROFILE LOCATION
- EXISTING STAFF GAGE LOCATION (APPROXIMATE)
- UPLAND TOPOGRAPHIC CONTOUR (1 FT)
- APPROXIMATE AREA OWNED BY MDNR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- SHORELINE (APPROXIMATE)
- PREVIOUS CHANNEL
- TERRACE

0 400 800 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE

AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

PROPOSED BANK AND FLOODPLAIN SOIL INVESTIGATION FOR AREA 3

ARCADIS

FIGURE 3-d

City: SYR DivGroup: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B006453.1.0003.00500)
Q:\KRSG\OtsegoCityDam\toOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Proposed Sample Locations - Floodplain Soil - RM53-RM-52_v6.mxd 8/24/2012 3:53:25 PM

ARCADIS

Attachment A

Data From Field Reconnaissance

ARCADIS

Tables

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-1 - Types of Banks Identified During Field Reconnaissance

Bank Type	Description
A	Shallow-sloped shelf to bankfull elevation, with vertical bank above
B	Sloping to bankfull elevation with woody surface protection. Vertical bank above
C	Bankfull bench (Sloping to bankfull elevation. Level shelf at bankfull elevation. Terraces above)
D	45° bank slope protected with cobbles/boulders
F	Low vertical bank at residential property with lawn extending to the river
G	Low vertical rock-lined bank at esidential property with lawn extending to the river
H	Top of bank at bankfull elevation. Shelf supporting wetlands beyond
I	Low (2-3 feet) vertical erosive bank (fine materials)
J	High bank (> 10 feet in height) densely vegetated
K	Low (2-3 feet) bank with wetland of reed canary grass and cattail beyond
L	Low bank (3 feet) where bankfull is at top-of-bank with reed canary grass vegetation
M	Low bank (2.5 feet) where bankfull is at top-of-bank with emergent wetland vegetation
N	Shallow sloped bank to upland forest area

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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-2 - Reconnaissance Field Notes - Sample Coordinates

Location ID	Date	Easting	Northing	Coordinate source	Probe Description
ORBN-01	6/25/2012	12757440.39	352883.37	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-02	6/25/2012	12757686.94	353275.18	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-03	6/25/2012	12760188.08	354159.42	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-04	6/25/2012	12760379.21	354124.56	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-05	6/25/2012	12760631.77	354021.17	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-06	6/25/2012	12760928.58	353874.69	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-07	6/25/2012	12761295.19	353860.74	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-08	6/25/2012	12761380.58	353888.08	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-09	6/25/2012	12761510.27	353890.09	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-10	6/25/2012	12762020.81	353997.66	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-11	6/25/2012	12762252.78	354001.97	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-12	6/25/2012	12762749.51	353858.71	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-13	6/25/2012	12762917.38	353830.90	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-14	6/25/2012	12762995.07	353816.37	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-15	6/25/2012	12763203.75	353772.17	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-16	6/25/2012	12763352.26	353702.65	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-17	6/25/2012	12763570.13	353667.43	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-18	6/26/2012	12750946.51	354670.64	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-19	6/26/2012	12751302.79	354407.47	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-20	6/26/2012	12751532.03	354172.12	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-21	6/26/2012	12751868.67	353777.03	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-22	6/26/2012	12752204.20	353468.55	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-23	6/26/2012	12754519.86	351992.56	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-24	6/26/2012	12754870.82	352217.63	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-25	6/26/2012	12754965.99	352335.62	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-26	6/26/2012	12755285.63	352643.04	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-27	6/26/2012	12755769.77	352541.58	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-28	6/27/2012	12763602.97	353653.38	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-29	6/27/2012	12763646.15	353682.69	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-30	6/27/2012	12763900.81	353699.02	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-31	6/27/2012	12764416.01	353673.04	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBN-32	6/27/2012	12764574.57	353650.95	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-01	6/25/2012	12764270.95	353537.91	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-02	6/25/2012	12764261.72	353540.12	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-03	6/25/2012	12764230.91	353540.29	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-04	6/25/2012	12764131.65	353528.20	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-05	6/25/2012	12764108.25	353541.32	ARCADIS GPS Units	2012 Area 3 Reconnaissance

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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-2 - Reconnaissance Field Notes - Sample Coordinates

Location ID	Date	Easting	Northing	Coordinate source	Probe Description
ORBS-06	6/25/2012	12764039.27	353540.63	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-07	6/25/2012	12763991.58	353538.71	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-08	6/25/2012	12763938.99	353548.78	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-09	6/25/2012	12763882.29	353595.06	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-10	6/25/2012	12763780.02	353556.85	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-11	6/25/2012	12763772.72	353521.40	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-12	6/25/2012	12763663.46	353525.96	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-13	6/25/2012	12763526.79	353524.17	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-14	6/25/2012	12763406.15	353600.70	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-15	6/25/2012	12763343.20	353621.74	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-16	6/25/2012	12762940.53	353699.67	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-17	6/25/2012	12762667.72	353805.68	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-18	6/25/2012	12762436.20	353801.50	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-19	6/25/2012	12762332.11	353852.42	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-20	6/25/2012	12762042.65	353878.59	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-21	6/25/2012	12761901.64	353863.68	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-22	6/25/2012	12760433.56	353969.32	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-23	6/25/2012	12759750.73	353975.07	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-24	6/25/2012	12759330.36	353814.40	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-25	6/25/2012	12759238.15	353801.38	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-26	6/25/2012	12758423.13	353653.00	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-27	6/25/2012	12758218.25	353543.23	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-28	6/25/2012	12757975.25	353411.71	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-29	6/25/2012	12757771.62	353201.73	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-30	6/25/2012	12757644.74	352917.51	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-31	6/25/2012	12757629.19	352870.87	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-32	6/26/2012	12757597.26	352760.76	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-33	6/26/2012	12757054.99	352314.71	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-34	6/26/2012	12756380.46	352282.61	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-35	6/26/2012	12755580.61	352550.37	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-36	6/26/2012	12755392.94	352542.69	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-37	6/26/2012	12752631.87	352528.20	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-38	6/26/2012	12752468.48	352685.18	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-39	6/26/2012	12752480.55	352642.89	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-40	6/26/2012	12752441.15	352843.38	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORBS-41	6/26/2012	12751468.64	353854.99	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-01	6/26/2012	12750874.25	354833.65	ARCADIS GPS Units	2012 Area 3 Reconnaissance

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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-2 - Reconnaissance Field Notes - Sample Coordinates

Location ID	Date	Easting	Northing	Coordinate source	Probe Description
ORFP-02	6/26/2012	12750764.29	354867.72	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-03	6/26/2012	12750716.61	354934.13	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-04	6/26/2012	12751294.77	353997.51	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-05	6/26/2012	12751201.70	353970.64	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-06	6/26/2012	12751288.50	353766.75	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-07	6/26/2012	12751280.78	353758.59	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-08	6/26/2012	12752791.57	352697.31	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-09	6/26/2012	12753062.23	352581.94	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-10	6/26/2012	12753234.88	352414.62	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-11	6/26/2012	12753561.97	352564.43	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-12	6/26/2012	12753135.21	352950.20	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-13	6/27/2012	12754426.96	352234.47	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-14	6/27/2012	12754248.72	352406.85	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-15	6/27/2012	12754202.66	352555.12	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-16	6/27/2012	12754627.30	352110.99	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-17	6/27/2012	12754678.33	352239.31	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-18	6/27/2012	12755396.64	352293.50	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-19	6/27/2012	12755054.45	351943.11	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-20	6/27/2012	12755420.97	352022.94	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-21	6/27/2012	12755799.36	352130.29	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-22	6/27/2012	12755775.62	352713.24	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-23	6/27/2012	12756212.51	352681.85	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-24	6/28/2012	12757391.86	352959.31	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-25	6/28/2012	12757476.44	353076.81	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-26	6/28/2012	12757249.38	352699.39	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-27	6/28/2012	12757202.01	352540.86	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-28	6/28/2012	12757177.02	352590.43	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-29	6/28/2012	12757965.84	353316.98	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-30	6/28/2012	12758073.99	353268.84	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-31	6/28/2012	12758328.97	353407.10	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-32	6/28/2012	12758401.00	353339.72	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-33	6/28/2012	12758701.36	353135.47	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-34	6/28/2012	12759612.18	353800.22	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-35	6/28/2012	12759264.65	353671.68	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-36	6/28/2012	12760450.20	354144.63	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-37	6/28/2012	12760489.43	354163.05	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORFP-38	6/28/2012	12760206.47	354176.37	ARCADIS GPS Units	2012 Area 3 Reconnaissance

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Table A-2 - Reconnaissance Field Notes - Sample Coordinates

Location ID	Date	Easting	Northing	Coordinate source	Probe Description
ORSED-01	6/25/2012	12763669.20	353491.45	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-02	6/26/2012	12752561.93	352505.28	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-03	6/26/2012	12752596.88	352513.28	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-04	6/26/2012	12752579.83	352536.98	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-05	6/26/2012	12751466.28	353856.90	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-06	6/26/2012	12751472.52	353885.46	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-07	6/28/2012	12756219.28	352269.05	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-08	6/28/2012	12755716.24	352618.77	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-09	6/28/2012	12755456.61	352694.81	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-10	6/28/2012	12755272.27	352515.97	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-11	6/28/2012	12755273.81	352506.49	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-12	6/28/2012	12754676.39	352106.55	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-13	6/28/2012	12754682.38	352101.17	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-14	6/28/2012	12753939.83	351982.10	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-15	6/29/2012	12760950.63	353894.33	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-16	6/29/2012	12761151.30	353852.91	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-17	6/29/2012	12763506.58	353526.03	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-18	6/29/2012	12763589.35	353516.12	ARCADIS GPS Units	2012 Area 3 Reconnaissance
ORSED-19	6/29/2012	12763547.07	353490.55	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-01	7/11/2012	12754008.66	350599.75	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-02	7/11/2012	12754249.90	350746.60	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-03	7/11/2012	12753929.84	351119.72	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-04	7/11/2012	12754287.30	351158.29	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-05	6/29/2012	12753764.45	351347.50	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-06	6/29/2012	12754541.32	351425.35	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-07	6/29/2012	12754853.93	351528.16	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-08	6/29/2012	12754687.44	351206.22	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-09	6/29/2012	12753735.59	351104.51	ARCADIS GPS Units	2012 Area 3 Reconnaissance
OSED-10	6/29/2012	12754048.19	351243.83	ARCADIS GPS Units	2012 Area 3 Reconnaissance

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Table A-3 - Reconnaissance Field Notes - Sediment Probing Data

Location ID	Date	Water Depth (feet)	Probe Depth (feet)	Penetration (feet)	Recovery (feet)	Method	Probe Description / Notes
ORSED-01	6/25/2012			4.7	1.0	3" Lexan	silt over gravel, hard bottom
ORSED-02	6/26/2012			7.0	2.4	3" Lexan	top foot-clayey silt with trace organics, no hard bottom
ORSED-03	6/26/2012			-	-	3" Lexan	CDM core (Pickerel Weed Wetland area)
ORSED-04	6/26/2012			4.0	3.1	3" Lexan	-
ORSED-05	6/26/2012			2.0	1.3	3" Lexan	-
ORSED-06	6/26/2012			5.0	3.0	3" Lexan	-
ORSED-07	6/28/2012			-	-	3" Lexan	dark grey color, sandy silt, no recovery - 3 attempts
ORSED-08	6/28/2012			2.2	1.4	3" Lexan	deposit at mouth of small inflow channel - sandy elsewhere
ORSED-09	6/28/2012			3.3	0.8	3" Lexan	area extends 15 - 20 feet from bank - potential bank collapse rather than sediment deposit
ORSED-10	6/28/2012			2.4	1.8	3" Lexan	-
ORSED-11	6/28/2012			3.3	1.8	3" Lexan	area extends approximately 20 feet from bank and approximately 50 feet downstream from downed tree
ORSED-12	6/28/2012			-	2.3	3" Lexan	CDM core
ORSED-13	6/28/2012			5.0	3.3	3" Lexan	located approximately 8 feet from ORSED-12
ORSED-14	6/28/2012			3.8	1.5	3" Lexan	located across the channel from the Pine Creek outflow
ORSED-15	6/29/2012				7.0	3" Lexan	-
ORSED-16	6/29/2012			3.0	2.0	3" Lexan	-
ORSED-17	6/29/2012			2.0	1.7	3" Lexan	-
ORSED-18	6/29/2012			-	-	3" Lexan	CDM core, gray materials (clay) identified at 2 to 2.5 feet below ground surface
ORSED-19	6/29/2012			2.0	1.5	3" Lexan	sediment area around ORSED-18 and ORSED-19 is backwater area extending upstream from the river on the south side and has berms on either side
OSED-05	6/29/2012	7.0	4.6	4.1	3.0	3" Lexan	-
OSED-06	6/29/2012	7.8	2.2	3.2	2.7	3" Lexan	-
OSED-07	6/29/2012	7.9		2.2	2.0	3" Lexan	Pine Creek Cores
OSED-08	6/29/2012	8.2		5.0	4.0	3" Lexan	
OSED-09	6/29/2012	3.6	2.4	2.9	2.9	3" Lexan	
OSED-10	6/29/2012	9.7		3.8	2.9	3" Lexan	
OSED-01	7/11/2012	6	5.2	5.5	3.5	3" Lexan	
OSED-02	7/11/2012	4	2.9	3.8	3.5	3" Lexan	
OSED-04	7/11/2012	9.1	3	4.5	4.0	3" Lexan	
OSED-03	7/11/2012	9.1	3.79	4.4	3.5	3" Lexan	

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Table A-4 - Reconnaissance Field Notes - Floodplain Vegetation Assessment

Location ID	Date	Water Depth BGS (inches)	Penetration (inches)	Recovery (inches)	Method	Floodplain Type	Vegetation Description
ORFP-01	6/26/2012	-	32	32	Hand Auger	Forest Upland	confirmed outer boundary of floodplain area 1
ORFP-02	6/26/2012	29	30	30	Hand Auger	Upland Field	pokeweed, box elder, stinging nettle, reed canary grass
ORFP-03	6/26/2012	24	36	36	Hand Auger	Wet Meadow Wetland	narrow leaf cattail, jewel weed, joe pye weed
ORFP-04	6/26/2012	24	72	37	Hand Auger and 3" Lexan	Emergent Wetland	reed canary grass
ORFP-05	6/26/2012	25	30	30	Hand Auger	Terrace	joe pye weed, stinging nettles, ash, box elder, emergent marsh/wet meadow (on terrace, likely groundwater)
ORFP-06	6/26/2012	-	32	32	Hand Auger	Terrace	
ORFP-07	6/26/2012	30	36	36	Hand Auger	Perched Wetland	scrub shrub, arrow arum, joe pye weed, jewel reed, dogwood, cattail
ORFP-08	6/26/2012	39	42	42	Hand Auger	Open Field	vegetation ground ivy (mowed), some trees
ORFP-09	6/26/2012	57	78	78	Hand Auger and 3" Lexan	Young Forest	mulberry, reed canary grass, dogwood, ragweed, stinging nettle, smart week, silver maple
ORFP-10	6/26/2012	48	78	56	Hand Auger and 3" Lexan	Field/Young Forest	green ash, great ragweed, yellow avens, jewel weed, stinging nettle, garlic mustard
ORFP-11	6/26/2012	-	78	59	Hand Auger and 3" Lexan	Wet Meadow	rice cut grass, cattails on fringe around northern part of previous channel area
ORFP-12	6/26/2012	36	66	60	Hand Auger and 3" Lexan	-	
ORFP-13	6/27/2012	-	66	61	Hand Auger and 3" Lexan	Young Forest	shrub, dogwood, black walnut, reed canary grass, box elder
ORFP-14	6/27/2012	29	78	56	Hand Auger and 3" Lexan	Wet Meadow	reed canary grass, cattails (micro-habitat)
ORFP-15	6/27/2012	36	78	66	Hand Auger and 3" Lexan	Forest Upland	close to wet forest, box elder, hackberry, locust, green ash
ORFP-16	6/27/2012	42	63	65	Hand Auger and 3" Lexan	Young Forest	box elder, stinging nettle, reed canary grass, green ash
ORFP-17	6/27/2012	52	55	52	Hand Auger and 3" Lexan	Mixed Field/Forest	mesic forest (almost wet), locust, box elder, elm, green ash, jewel weed, ragweed, stinging nettle
ORFP-18	6/27/2012	41	56	56	Hand Auger and 3" Lexan	Upland Field	reed canary grass, thistle, goldenrod
ORFP-19	6/27/2012	43	45	45	Hand Auger and 3" Lexan	Mesic Forest	black walnut, box elder, burdock, jewel weed, poke weed, catnip
ORFP-20	6/27/2012	43	50	50	Hand Auger and 3" Lexan	In Channel	strawberry, garlic mustard, jewel weed, green ash seedlings, violet, blackberry
ORFP-21	6/27/2012	48	52	52	Hand Auger and 3" Lexan	In Channel	green ash seedlings, jewel weed, cone flower
ORFP-22	6/27/2012	6	66	39	Hand Auger and 3" Lexan	Emergent Wetland	narrow leaf cattail, jewel weed, willows, joe pye weed
ORFP-23	6/27/2012	12	44	65	Hand Auger and 3" Lexan	Emergent Wetland	bur-reed, narrow leaf cattail, multi-flora rose
ORFP-24	6/28/2012	-	40	40	Hand Auger	Floodplain Forest	green ash, silver maple, red bud, reed canary grass, goldenrod, white avens
ORFP-25	6/28/2012	-	30	30	Hand Auger	Floodplain Forest	grey birch, ironwood, green ash, wood nettle, white avens
ORFP-26	6/28/2012	32	46	48	Hand Auger and 3" Lexan	Emergent Wetland	narrow leaf and broad leaf cattail, stinging nettle, sensitive fern
ORFP-27	6/28/2012	30	47	51	Hand Auger and 3" Lexan	Transitional Floodplain	goldenrod, aster, willow, sycamore, silver maple
ORFP-28	6/28/2012	31	43	43	Hand Auger	Emergent Wetland	narrow leaf cattail, willow, arrow arum, sensitive fern
ORFP-29	6/28/2012	-	49	52	Hand Auger and 3" Lexan	Floodplain Forest	box elder, silver maple, green ash, reed canary grass
ORFP-30	6/28/2012	-	-	-	-	-	top of berm defining study area boundary
ORFP-31	6/28/2012	32	43	43	Hand Auger	Emergent Wetland	narrow leaf cattail, aster, jewel weed, joe pye reed
ORFP-32	6/28/2012	-	-	-	-	-	top of berm defining study area boundary
ORFP-33	6/28/2012	-	-	-	-	-	revision to study area boundary at this location
ORFP-34	6/28/2012	-	20	20	Hand Auger	Floodplain Forest	silver maple, black walnut, choke cherry, dogwood, blackberry
ORFP-35	6/28/2012	-	10	10	Hand Auger	Floodplain Forest	willow, walnut, dogwood, reed canary grass, hickory
ORFP-36	6/28/2012	24	34	34	Hand Auger	Floodplain Field	reed canary grass, stinging nettle
ORFP-37	6/28/2012	11	33	32	Hand Auger and 3" Lexan	Emergent Wetland	narrow leaf cattail
ORFP-38	6/28/2012	-	-	-	Hand Auger and 3" Lexan	-	sandy bottom

Notes:
bgs - below ground surface

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Table A-5 - Reconnaissance Field Notes - Core Descriptions

Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Sediment					
ORSED-01	6/25/2012	0	12	inches	grey brown clayey silt, slight odor, trace organics, degraded leaf/root material
ORSED-02	6/26/2012	0	12	inches	dark grey brown silty clay
		12	29	inches	dark grey silty clay
ORSED-04	6/26/2012	0	3	inches	fine sand
		3	23	inches	medium coarse sand
		23	27	inches	dark grey silty clay
		27	37	inches	fine sand, trace silt
ORSED-05	6/26/2012	0	4	inches	silty sand
		4	10	inches	grey silty clay, slight odor
		10	13	inches	grey silty clay, some sand
		13	16	inches	brown sandy clay
ORSED-06	6/26/2012	0	18	inches	medium coarse sand
		18	35	inches	grey silty clay
		35	36	inches	grey brown silty clay
ORSED-08	6/28/2012	0	2	inches	dark grey clayey silt, some fine sand
		2	17	inches	dark grey clayey silt, slight odor
ORSED-09	6/28/2012	0	9	inches	dark grey clayey silt, odor
		9	10	inches	dark grey clayey silt, odor, some fine gravel
ORSED-10	6/28/2012	0	10	inches	medium to coarse sand, some fine gravel, pebble
		10	22	inches	grey brown medium to coarse sand, trace silt, trace fine gravel
ORSED-11	6/28/2012	0	13	inches	dark grey medium to coarse sand, some silt, coal piece at 13"
		13	20	inches	dark grey fine to coarse sand
		20	22	inches	dark grey sandy silt, no odor
ORSED-12	6/28/2012	0	12	inches	brown fine sand, some silt
		12	18	inches	dark grey clayey silt, odor, sheen
		18	24	inches	brown clayey silt
		24	28	inches	silty sand
ORSED-13	6/28/2012	0	20	inches	grey brown sandy silt
		20	26	inches	dark grey clayey silt, some shells, degrading organics (leaves), moderate odor, sheen
		26	40	inches	brown sandy silt
ORSED-14	6/28/2012	0	9	inches	dark grey sandy silt
		9	17.5	inches	dark grey silty sand, trace organics (wood), moderate odor
		17.5	18	inches	grey clayey silt
ORSED-15	6/29/2012	0	2	inches	brown silty sand
		2	7	inches	grey brown silty sand, coarse material along bank
ORSED-16	6/29/2012	0	7	inches	grey brown silty sand
		7	17	inches	grey fine silty sand
		17	24	inches	dark grey silty sand

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Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Sediment (Cont.)					
ORSED-17	6/29/2012	0	2	inches	grey brown silty sand
		2	10	inches	dark grey to black sandy silt, some organics
		10	14	inches	brown silty sand
		14	20	inches	dark grey to black clayey silt, some organics, no odor
ORSED-19	6/29/2012	0	6	inches	dark grey to black degrading organic materials, high silt content
		6	12	inches	dark grey to black silty sand
		12	18	inches	grey brown silty sand, some coarse sand to fine gravel
Floodplain Soil					
ORFP-01	6/26/2012	0	32	inches	sand, some gravel
ORFP-02	6/26/2012	0	27	inches	grey brown clay
		27	30	inches	orange brown sand
ORFP-03	6/26/2012	0	34	inches	dark grey clay (black)
		34	36	inches	sand
ORFP-04	6/26/2012	0	10	inches	grey organic silt with decaying organic matter
		10	42	inches	grey silt, odor
		42	57	inches	grey silt
ORFP-05	6/26/2012	0	20	inches	dark brown to black silty clay loam
		20	30	inches	light brown silty sand
ORFP-06	6/26/2012	0	8	inches	black silty clay
		8	30	inches	brown silty clay
		30	32	inches	tan clay
ORFP-07	6/26/2012	0	36	inches	black organic silt, moist
ORFP-08	6/26/2012	0	27	inches	grey brown clay loam
		27	42	inches	brown silty sand, moist
ORFP-09	6/26/2012	0	44	inches	grey brown clay loam
		44	78	inches	dark grey silty clay, odor
ORFP-10	6/26/2012	0	42	inches	grey brown clay loam
		42	55	inches	grey brown clay loam, slight odor
		55	56	inches	sand
ORFP-11	6/26/2012	0	2	inches	brown detritus
		2	42	inches	grey silty clay
		42	59	inches	dark grey silty clay, trace shells
ORFP-12	6/26/2012	0	47	inches	light grey silty clay
		47	60	inches	dark grey clayey silt, moderately decomposed organics
ORFP-13	6/27/2012	0	25	inches	grey clay loam
		25	45	inches	grey silty clay with some brown silty clay
		45	47	inches	grey silty clay
		47	55	inches	dark grey to black clayey silt, slight odor
		55	59	inches	grey clayey silt with some fine sand
		59	61	inches	grey silty fine sand

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Table A-5 - Reconnaissance Field Notes - Core Descriptions

Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Floodplain Soil (Cont.)					
ORFP-14	6/27/2012	0	36	inches	grey brown clay loam, slight odor
		36	40	inches	grey clayey silt, no noticeable odor
		40	43	inches	grey clayey silt, some odor
		43	54	inches	dark grey clayey silt, slight odor
		54	56	inches	organic silt
ORFP-15	6/27/2012	0	23	inches	grey brown clay
		23	36	inches	brown silty medium sand
		36	40	inches	brown silty medium sand
		40	54	inches	grey brown silty sand, some gravel
		54	56	inches	multi color gravel, wood and gravel
		56	64	inches	brown silty sand
		64	66	inches	cobble
ORFP-16	6/27/2012	0	22	inches	grey clayey silt, slight odor
		22	35	inches	brown silty sand, no odor
		35	42	inches	dark grey sandy silt
		42	46	inches	dark grey silty sand
		46	58	inches	dark grey clayey silt, slight odor
		58	59	inches	dark grey sandy silt with more organics
		59	65	inches	dark grey sand silt
ORFP-17	6/27/2012	0	42	inches	brown silty clay, no odor
		42	45	inches	brown silty clay
		45	51	inches	grey brown silty clay, no odor
		51	52	inches	dark brown to black sandy silt, some small gravel
ORFP-18	6/27/2012	0	7	inches	grey silty clay, slight odor
		7	9	inches	sand lens, brown fine sand
		9	15	inches	grey silty clay, slight odor
		15	16	inches	sand lens, brown fine sand
		16	26	inches	grey silty clay
		26	30	inches	brown fine sand
		30	42	inches	brown sandy silt
		42	44	inches	brown clayey silt
		44	56	inches	brown sandy silt
ORFP-19	6/27/2012	0	24	inches	grey brown clayey silt
		24	45	inches	brown clayey silt, trace sand, trace organics (roots)
ORFP-20	6/27/2012	0	46	inches	brown clayey silt, slight odor, trace organics
		46	49	inches	brown clayey silt
		49	50	inches	brown sandy silt

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Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Floodplain Soil (Cont.)					
ORFP-21	6/27/2012	0	44	inches	grey silty clay, slight odor
		44	50	inches	dark grey clayey silt
		50	52	inches	dark brown clayey silt, some small gravel
ORFP-22	6/27/2012	0	8	inches	brown peat, lens of grey clayey silt at 8"
		8	33	inches	dark grey clayey silt, moderate odor
		33	39	inches	brown silty sand
ORFP-23	6/27/2012	0	20	inches	black to dark brown peat with some sand
		20	29	inches	brown small to medium gravel
		29	35	inches	grey sand and gravel
		35	43	inches	decaying organics, some fine gravel
		43	57	inches	grey silty sand, trace fine gravel
		57	65	inches	brown peat material
ORFP-24	6/28/2012	0	16	inches	brown clayey silt, trace organics (roots)
		16	20	inches	brown sandy silt
		20	27	inches	brown clayey silt, trace organics
		27	33	inches	grey to brown clayey silt, some brown sandy silt
		33	40	inches	grey to brown sandy silt, some gravel
ORFP-25	6/28/2012	0	19	inches	dark brown clayey silt (dry)
		19	24	inches	brown silty sand
		24	30	inches	some gravel with depth
ORFP-26	6/28/2012	0	37	inches	dark brown peat material, some clayey silt
		37	43	inches	dark brown peat
		43	45	inches	brown clayey silt
		45	48	inches	grey sandy silt
ORFP-27	6/28/2012	0	23	inches	grey silty clay
		23	35	inches	dark brown peat
		35	40	inches	dark brown peat
		40	42	inches	brown clayey silt
		42	51	inches	grey silty sand with some gravel, trace shell fragments
ORFP-28	6/28/2012	0	23	inches	grey clayey silt intermixed with peat
		23	30	inches	brown peat
		30	43	inches	brown silty sand
ORFP-29	6/28/2012	0	28	inches	grey brown silty clay, some organics, pockets of brown sand, no odor
		28	43	inches	grey brown sandy silt
		43	45	inches	very fine sand
		45	50	inches	brown clayey silt
		50	52	inches	brown decaying organic matter (wood)

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Table A-5 - Reconnaissance Field Notes - Core Descriptions

Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Floodplain Soil (Cont.)					
ORFP-31	6/28/2012	0	13	inches	grey brown clayey silt
		13	29	inches	grey clayey silt
		29	43	inches	dark grey to black clayey silt, trace sand
ORFP-34	6/28/2012	0	14	inches	brown very fine sand, some gravel, some cobble
		14	20	inches	changing to light brown very fine to medium sand, some gravel
ORFP-35	6/28/2012	0	10	inches	brown very fine sand, cobble below
ORFP-36	6/28/2012	0	3	inches	grey brown clayey silt, some root matter
		3	8	inches	grey clayey silt with slight odor and some root material
		8	13	inches	brown fine to coarse sand
		13	18	inches	grey clayey silt, no odor
		18	29	inches	grey brown sandy silt
		29	34	inches	grey brown clayey silt, some sand, some fine to medium gravel
ORFP-37	6/28/2012	0	13	inches	grey brown peat with some clayey silt, no odor
		13	19	inches	grey clayey silt, slight odor
		19	23	inches	grey clayey silt with silty sand and fine to medium gravel
		23	29	inches	grey clayey silt, slight odor
		29	32	inches	grey brown sandy silt with fine to coarse gravel
Pine Creek Sediment					
OSED-01	7/12/2012	0	8	inches	Dark brown black sandy silt, trace organics (rootlets, leaves)
		8	16	inches	Grey brown fine sand, some organics (rootlets, twigs)
		16	24	inches	Dark brown black sandy silt, trace organics (rootlets, shells), odor
		24	42	inches	Grey brown very fine to medium sand, little silt, trace organics (roots, leaves)
OSED-02	7/12/2012	0	4	inches	Dark brown black silty fine sand, little organics (roots, leaves, shells, grass)
		4	8	inches	Grey brown sandy silt, trace organics (shells, root)
		8	16	inches	Grey brown silty clay, little fine sand, trace organics (shells, rootlets)
		16	42	inches	Tan grading to grey very fine to medium sand, little organics (leaves, roots, twigs)
OSED-03	7/12/2012	0	6	inches	Dark grey brown silt, trace fine sand, some organics (rootlets, shells, leaves)
		6	12	inches	Dark grey silt, trace organics (shells, rootlets), odor
		12	42.5	inches	Dark grey black silt, trace fine to coarse sand, trace cobble, trace organics (roots, shells), trace wood, 1" grey seam of fine to coarse sand at 34-35"
OSED-04	7/12/2012	0	12	inches	Dark brown black silty sand with organics (roots, leaves, grass)
		12	19	inches	Dark grey brown silt, trace fine sand, odor, trace organics (roots)
		19	34.5	inches	Dark greyish brown silt, trace fine sand, little organics (wood, leaves, roots)
		34.5	48	inches	Light grey brown very fine to coarse sand, trace wood and roots, trace shells
OSED-05	7/12/2012	0	12	inches	Dark brown black silt with fine sand and organics (leaves, roots, rootlets)
		12	15	inches	Grey brown silt, trace fine sand, little organics (rootlets), odor
		15	26	inches	Dark grey silt, trace organics (rootlets), odor
		26	36	inches	Dark brown silty clay, trace silt, trace organics (rootlets)

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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-5 - Reconnaissance Field Notes - Core Descriptions

Location ID	Date Processed	Core Top	Core Bottom	Core Units	Core Description
Pine Creek Sediment (Cont.)					
OSED-06	7/12/2012	0	11	inches	Dark brown black silt to fine sand, some organics (shells, roots, leaves)
		11	15	inches	Dark grey silt, trace clay, trace organics (rootlets, leaves), odor
		15	31	inches	Dark brown silt, some fine to coarse sand, trace clay, trace organics (rootlets, leaves), odor
OSED-07	7/12/2012	0	8	inches	Olive grey grading to dark grey silty clay, trace organics (roots, rootlets, shells)
		8	12	inches	Dark brown silt, trace clay, odor, trace organics (roots, shells)
		12	18	inches	Dark brown to black silt, trace fine sand, odor, trace organics (roots, shells)
		18	24	inches	Dark brown silt, some fine sand, trace organics (roots, shells)
OSED-08	7/12/2012	0	10	inches	Olive grey clay with silt, little organics (roots, rootlets, shells)
		10	22	inches	Dark grey brown mottled with black silt, little clay, trace organics (shells, rootlets)
		22	25.5	inches	Grey brown silt, trace fine sand, trace organics (shells, roots)
		25.5	29	inches	Red brown silt with organics (roots, rootlets), odor
		29	41	inches	Light brown silt, some clay, little fine to coarse sand, trace organics (shells, wood, roots)
OSED-09	7/12/2012	0	6	inches	Reddish brown clay with silt, little organics (shells, roots, wood, leaves)
		6	10	inches	Black silt, some organics (leaves, wood, roots)
		10	17	inches	Grey brown silt, trace clay, trace fine sand, trace organics (wood, leaves, shells, roots)
		17	22	inches	Brown clayey silt, trace organics (shells)
		22	31	inches	Dark reddish brown fine to coarse sand, trace clay, trace organics (roots)
OSED-10	7/12/2012	0	12	inches	Dark brown silt, little clay, trace fine sand, trace organics (roots)
		12	14.5	inches	Grey very fine to very coarse sand, trace organics (shellls)
		14.5	18	inches	Dark brown black silt, little fine to medium sand, odor
		18	23	inches	Dark brown very fine to coarse sand, trace organics (wood, shells)
		23	26	inches	Dark brown to black silt, little fine sand
		26	30	inches	Dark grey brown grading to light grey brown very fine sand, trace organics (leaves)

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Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-6 - Pine Creek Sediment Samples collected during Reconnaissance

Location ID	Sample Interval (inches)	Sample ID	Sample Date	Duplicated Sample ID	MS/MSD	Analysis[1]	Status
OSED-01	0 - 2	K57622	7/12/2012			PCB, TOC	Archived
	2 - 6	K57623	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 8	K57624	7/12/2012			PCB	Archived
	8 - 12	K57625	7/12/2012			PCB, PCDD/PCDF	Archived
	12 - 24	K57626	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	24 - 36	K57627	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	36 - 42	K57628	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-02	0 - 2	K57629	7/12/2012			PCB, TOC	Archived
	2 - 6	K57630	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 12	K57631	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	12 - 16	K57632	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	16 - 24	K57633	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	24 - 36	K57634	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	36 - 42	K57635	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-03	0 - 2	K57636	7/12/2012			PCB, TOC	Archived
	2 - 6	K57637	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 12	K57638	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	12 - 24	K57639	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	24 - 36	K57640	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	36 - 42.5	K57641	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-04	0 - 2	K57642	7/12/2012			PCB, TOC	Archived
	2 - 6	K57643	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 12	K57644	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	12 - 19	K57645	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	19 - 24	K57646	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	24 - 36	K57647	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	36 - 48	K57648	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-05	0 - 2	K57649	7/12/2012			PCB, TOC	Archived
	2 - 6	K57650	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 12	K57651	7/12/2012			PCB, PCDD/PCDF	Archived
	12 - 15	K57652	7/12/2012			PCB, PCDD/PCDF	Archived
	15 - 24	K57653	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	15 - 24	K57654	7/12/2012	K57653		PCB, PCDD/PCDF	Archived
	24 - 36	K57655	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-06	0 - 2	K57656	7/12/2012			PCB, TOC	Archived
	2 - 6	K57657	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 11	K57658	7/12/2012			PCB, PCDD/PCDF	Archived
	11 - 15	K57659	7/12/2012			PCB, PCDD/PCDF	Archived
	15 - 24	K57660	7/12/2012		X	PCB, PCDD/PCDF	Archived
	24 - 31	K57661	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-07	0 - 2	K57662	7/12/2012			PCB, TOC	Archived
	2 - 6	K57663	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 8	K57664	7/12/2012			PCB, PCDD/PCDF	Archived
	8 - 12	K57665	7/12/2012			PCB, PCDD/PCDF	Archived
	12 - 24	K57666	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	12 - 24	K57667	7/12/2012	K57666		PCB	Archived
OSED-08	0 - 2	K57668	7/12/2012			PCB, TOC	Archived
	2 - 6	K57669	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 10	K57670	7/12/2012			PCB, PCDD/PCDF	Archived
	10 - 12	K57671	7/12/2012			PCB, PCDD/PCDF	Archived
	12 - 22	K57672	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	22 - 25.5	K57673	7/12/2012			PCB, PCDD/PCDF	Archived
	25.5 - 29	K57674	7/12/2012			PCB, PCDD/PCDF	Archived
	29 - 41	K57675	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	29 - 41	K57676	7/12/2012	K57675		PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
OSED-09	0 - 2	K57677	7/12/2012			PCB, TOC	Archived
	2 - 6	K57678	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 10	K57679	7/12/2012			PCB, PCDD/PCDF	Archived
	10 - 22	K57680	7/12/2012		X	PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	22 - 31	K57681	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived

Georgia-Pacific LLC
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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment A - Data From Field Reconnaissance

Table A-6 - Pine Creek Sediment Samples collected during Reconnaissance

Location ID	Sample Interval (inches)	Sample ID	Sample Date	Duplicated Sample ID	MS/MSD	Analysis[1]	Status
OSED-10	0 - 2	K57682	7/12/2012			PCB, TOC	Archived
	2 - 6	K57683	7/12/2012			PCB, PCDD/PCDF	Archived
	6 - 12	K57684	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	12 - 15	K57685	7/12/2012			PCB	Archived
	15 - 18	K57686	7/12/2012			PCB, PCDD/PCDF	Archived
	18 - 23	K57687	7/12/2012			PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived
	23 - 30	K57688	7/12/2012		X - PCB and PCDD/PCDF	PCB, SVOCs/Pesticides/Metals, PCDD/PCDF	Archived

Notes:

1. Non-PCB analyses were identified depending on the volume of material available in the sample depth interval. Non-PCB analysis will be performed on selected samples based on the results of the PCB analysis.

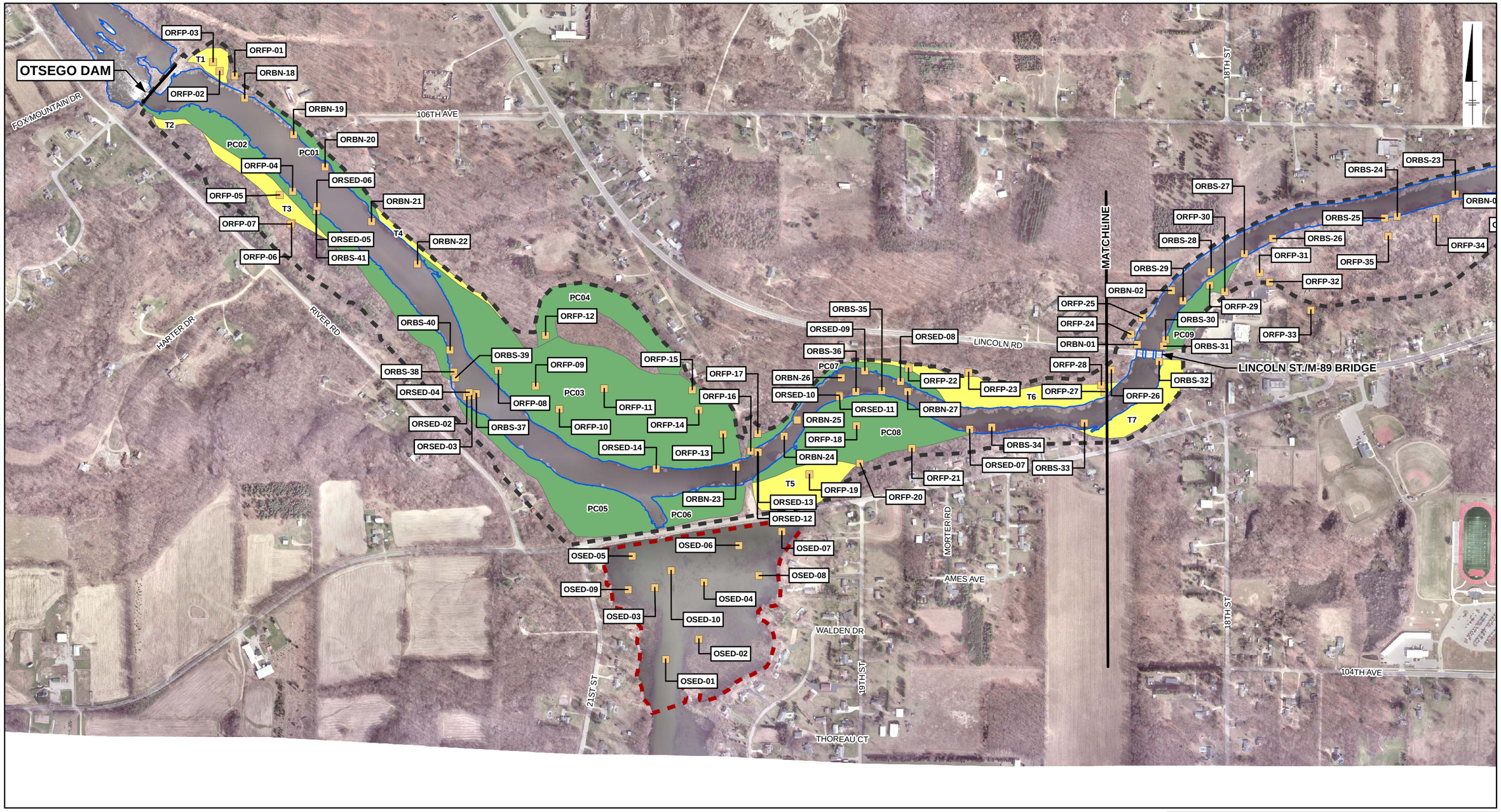
Location selected for PCB analysis

MS/MSD = Matrix Spike/Matrix Spike Duplicate
PCB = polychlorinated biphenyls
PCDD/PCDF = polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran
SVOC = semivolatile organic compound
TOC = total organic carbon

ARCADIS

Figures

DRAFT



LEGEND:

- GPS SURVEY POINT
- CURRENT SHORELINE
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PREVIOUS CHANNEL
- TERRACE

0 700 1,400 Feet

GRAPHIC SCALE

NOTE:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

AREA 3 RECONNAISSANCE LOCATIONS

ARCADIS

FIGURE
A-1a

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
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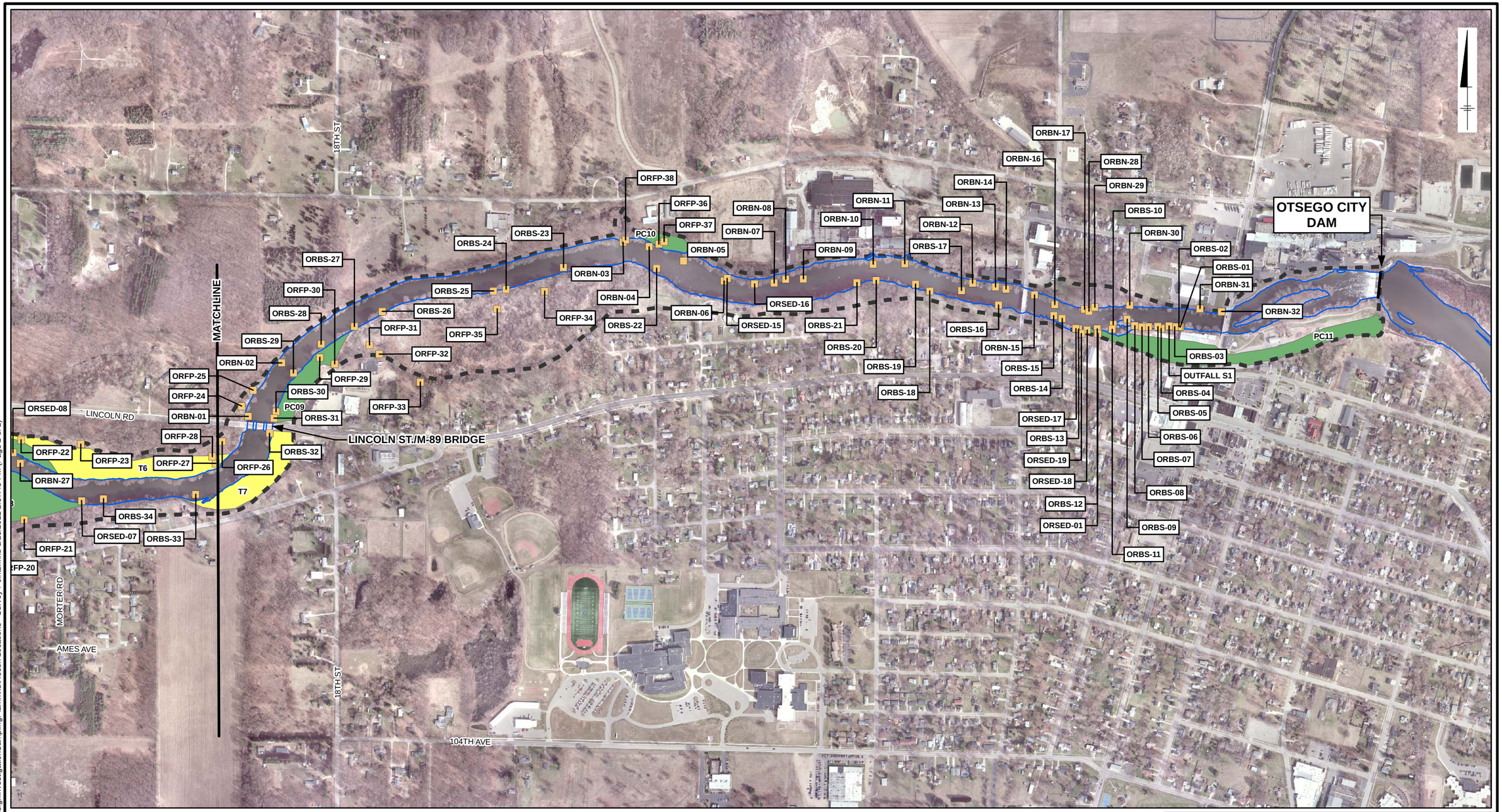
DRAFT



LEGEND:

- GPS SURVEY POINT
- CURRENT SHORELINE
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PREVIOUS CHANNEL
- TERRACE

0 700 1,400 Feet

GRAPHIC SCALE

NOTE:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.

GEORGIA-PACIFIC LLC
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AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

AREA 3 RECONNAISSANCE LOCATIONS

ARCADIS

FIGURE
A-1b

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\OtsegoCityDamToOtsegoDamPreDesignInvestigationSamplingPlan\mxd\Recon Locations - Survey Points.mxd 8/23/2012 2:37:45 PM (Page 2 of 2)

DRAFT

LEGEND:

- CURRENT SHORELINE
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PREVIOUS CHANNEL
- TERRACE

BANK TYPE:

- A
- A & B
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- NA
- SHEETPILE

NOTE:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.

0 700 1,400 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
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KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

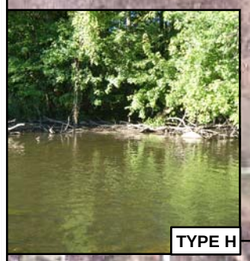
AREA 3 RECONNAISSANCE BANK TYPES

ARCADIS

FIGURE
A-2a

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\OtsegoCityDam\OtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Bank Types.mxd 8/24/2012 2:59:54 PM (Page 1 of 2)

DRAFT


TYPE H


TYPE J


TYPE K


TYPE G

OTSEGO CITY DAM

LINCOLN RD

MATCHLINE


TYPE I


TYPE A


TYPE D


TYPE F


TYPE B


TYPE N


TYPE L

104TH AVE

LEGEND:

- CURRENT SHORELINE
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY
- PREVIOUS CHANNEL
- TERRACE

BANK TYPE:

- A
- A & B
- B
- C
- D
- E
- F
- G
- H
- I
- J
- K
- L
- M
- N
- NA
- SHEETPILE

NOTE:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.

0 700 1,400 Feet

GRAPHIC SCALE

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

AREA 3 RECONNAISSANCE BANK TYPES

ARCADIS

FIGURE
A-2b

City: SYR Div/Group: 90 Created By: mkohberger Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\OtsegoCityDamToOtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Bank Types.mxd 8/24/2012 2:59:54 PM (Page 2 of 2)

DRAFT

OTSEGO DAM

OTSEGO CITY DAM

106TH AVE

104TH AVE

18TH ST

19TH ST

21ST ST

HARTER DR

RIVER RD

OLD ALLEGAN/OTSEGO RD

LINCOLN RD

JEFFERSON RD

MORTER RD

EARL ST

THOREAU CT

WALDEN DR

ASHLAND DR

UNKNOWN

CATHERINE ST

JOHN ST

WATSON RD

N 16TH ST

15TH ST

FLORENCE ST

HIGHLAND ST

FAIRVIEW ST

E RIVER ST

HELEN AVE

N NORTH ST

WATER ST

N GRANT ST

S SHERMAN ST

S GRANT ST

SHERWOOD ST

W ALLEGAN ST

W ORLEANS ST

E FRANKLIN ST

MURIEL ST

E MORRELL ST

S NORTH ST

N FAIR ST

COURT ST

JEWELL ST

E ALLEGAN ST

E ORLEANS ST

W FRANKLIN ST

S WILMOTT ST

CONFERENCE ST

W HAMMOND ST

LINCOLN ST

GARFIELD ST

MCKINLEY ST

WASHINGTON ST

KALAMAZOO ST

N FARMER ST

S FAIR ST

E HAMMOND ST

S PLATT ST

CHARLES ST

DIX ST

IRWING ST

TEMPLE ST

ALLEN ST

BAYBERRY LN

HOWARD ST

TANGLEWOOD DR

OAK ST

SYCAMORE ST

ELM ST

S 16TH ST

0 1,100 2,200 Feet

GRAPHIC SCALE

LEGEND:

- ROAD CENTERLINE (APPROXIMATE)
- 683 FT CONTOUR
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY (ORIGINAL)
- APPROXIMATE PINE CREEK STUDY AREA BOUNDARY (ORIGINAL)
- APPROXIMATE AREA 3 STUDY AREA BOUNDARY (REVISED)
- EXISTING SHORELINE (APPROXIMATE)

TOPOGRAPHIC ELEVATIONS (FT NGVD29):

- < 676
- 676 - 678
- 678 - 680
- 680 - 682
- 682 - 684
- 684 - 686
- 686 - 688
- 688 - 690
- > 690

NOTES:

1. AERIAL IMAGE DERIVED FROM ORTHOGRAPHIC DATA BY AXIS GEOSPATIAL, LLC. OTSEGO AREA FLOWN SPRING 2010.
2. ORIGINAL STUDY AREA BOUNDARY DERIVED FROM OUTER EXTENT OF FEMA 100-YEAR FLOODPLAIN BOUNDARY, 683 FEET NGVD29 FORMER IMPOUNDMENT ELEVATION, AND VISUALLY IDENTIFIED IMPOUNDED AREAS FROM HISTORICAL PHOTOGRAPHS.
3. ORIGINAL STUDY AREA BOUNDARY WAS REVISED BASED ON OBSERVATIONS MADE DURING THE AREA 3 RECONNAISSANCE.

GEORGIA-PACIFIC LLC
ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
AREA 3 PROPOSED SURVEY AND FIELD SAMPLING PLAN

REVISIONS TO STUDY AREA BOUNDARY

ARCADIS

FIGURE
A-3

City: SYR Div/Group: 90 Created By: Sruti Pulugurtha Last Saved By: MKOHBERGER
KRSG (B0064531.0002.00500)
Q:\KRSG\OtsegoCity\DamTo\OtsegoDam\PreDesignInvestigationSamplingPlan\mxd\Study Area Boundaries.mxd 8/24/2012 10:33:40 AM

ARCADIS

Attachment B

Mercury Data

ARCADIS

Tables

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment B - Mercury Data

Table B-1 -- Sediment Mercury Data

Sampling Event	1993/1994 Sediment Investigation	1993/1994 Sediment Investigation	1993/1994 Sediment Investigation	1993/1994 Sediment Investigation	1993/1994 Sediment Investigation	2000 USGS Sediment Sampling
Location ID	KPT92-7	KPT92-7	KPT92-7	KPT92-7	KPT92-7	USGS-2
Northing	353435.46	353435.46	353435.46	353435.46	353435.46	354868.73
Easting	12752218.65	12752218.65	12752218.65	12752218.65	12752218.65	12750608.59
Elevation	669.29	669.29	669.29	669.29	669.29	--
Rivermile	50.02	50.02	50.02	50.02	50.02	--
SRI Reach	AREA 3	AREA 3	AREA 3	AREA 3	AREA 3	AREA 3
RI Reach	D	D	D	D	D	D
Sample ID	K51296	K51297	K51298	K51299	K51300	USGS-2
Sample Date	7/23/1997	7/23/1997	7/23/1997	7/23/1997	7/23/1997	8/3/2000
Depth Interval (in)	0-2	2-12	12-29	29-36	36-48	18-26.4
Sample Duplicated					K51301	
Inorganics (mg/kg)						
Mercury	0.050 U	0.050 U	0.050 B	3.8	4.3 [5.1]	4.1

Notes:

Duplicate sample results presented in brackets.

- Grey shading indicates the presence of a non-detect result.

mg/kg - milligrams per kilogram

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Supplemental Remedial Investigations/Feasibility Studies
Area 3/Former Otsego Impoundment Proposed Survey and Field Sampling Plan
Attachment B - Mercury Data

Table B-2 -- Floodplain Soil Mercury Data

Sampling Event	1993 Floodplain Investigation	1993 Floodplain Investigation	1993/1994 Former Impoundment Sediment Investigation	1993/1994 Former Impoundment Sediment Investigation
Location ID	KF4-4	KF4-4	OES6-5	OES6-5
Northing	353287.84	353287.84	354441.11	354441.11
Easting	12751866.38	12751866.38	12750917.18	12750917.18
Elevation	686.40	686.40	675.97	675.97
Rivermile	49.99	49.99	49.71	49.71
SRI Reach	AREA 3	AREA 3	AREA 3	AREA 3
RI Reach	D	D	D	D
Sample ID	K10042	K10043	K25320	K25321
Sample Date	7/8/1993	7/8/1993	2/16/1994	2/16/1994
Depth Interval (in)	0-6	6-12	0-6	6-18
Inorganics (mg/kg)				
Mercury	0.070 B	0.050 B	0.68	2.3

Notes:
mg/kg - milligrams per kilogram

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Table B-3 -- Surface Water Mercury Data

Sampling Event	1993/1994 Surface Water
Location ID	SWK-4
Northing	353568.88
Easting	12764635.62
SRI Reach	AREA 3
RI Reach	D
Sample ID	K34114
Sample Date	8/14/1994
Inorganics (mg/L)	
Mercury	0.000060 B

Notes:
mg/L - milligrams per litre

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Table B-4 -- Biota Mercury Data

Sampling Event	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation
Location ID	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07
Sample ID	K40268F	K40269F	K40270F	K40271F	K40272F	K40273F	K40274F	K40275F	K40284F	K40285F	K40286F
ABSA	7	7	7	7	7	7	7	7	7	7	7
Sample Date	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993
Species	Carp	Carp	Carp	Carp	Carp	Carp	Carp	Carp	Carp	Carp	Carp
Tissue	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet
Composite (Y/N)	N	N	N	N	N	N	N	N	N	N	N
Length (in)	24.4	25.2	24.0	21.7	19.3	19.7	18.5	19.3	18.9	24.8	22.8
Weight (lbs)	6.4	7.9	7.9	4.6	3.3	3.3	2.9	3.7	3.1	7.3	5.3
Inorganics (mg/kg)											
Mercury	0.10	0.090	0.13	0.080	0.060	0.030	0.050	0.030	0.050	0.060	0.12

Notes:

mg/kg - milligrams per kilogram

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Table B-4 -- Biota Mercury Data

Sampling Event	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation
Location ID	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07
Sample ID	K40276F	K40277F	K40278F	K40279F	K40280F	K40281F	K40282F	K40287F	K40288F	K40289F	K40290F
ABSA	7	7	7	7	7	7	7	7	7	7	7
Sample Date	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993
Species	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass	Smallmouth Bass
Tissue	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet	Fillet
Composite (Y/N)	N	N	N	N	N	N	N	N	N	N	N
Length (in)	13.0	13.4	15.0	14.6	17.3	16.1	15.0	15.0	12.2	11.8	14.2
Weight (lbs)	0.9	1.1	1.5	1.3	2.4	2.0	1.5	1.5	0.7	0.7	1.1
Inorganics (mg/kg)											
Mercury	0.25 JN	0.10 JN	0.27 JN	0.19 JN	0.33 JN	0.31 JN	0.13 JN	0.33 JN	0.15 JN	0.10 JN	0.22 JN

Notes:

mg/kg - milligrams per kilogram

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Table B-4 -- Biota Mercury Data

Sampling Event	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation	1993/1994 Aquatic Biota Investigation
Location ID	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07	ABSA-07
Sample ID	K40291W	K40292W	K40293W	K40294W	K40295W	K40296W	K40297W	K40298W	K40299W	K40300W	K40301W
ABSA	7	7	7	7	7	7	7	7	7	7	7
Sample Date	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993	10/12/1993
Species	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse	Golden Redhorse
Tissue	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body	Whole Body
Composite (Y/N)	N	N	N	N	N	N	N	N	N	N	N
Length (in)	11.8	11.8	11.4	11.8	11.0	10.2	10.6	7.1	6.3	6.3	5.9
Weight (lbs)	0.7	0.7	0.4	0.7	0.4	0.4	0.4	0.1	0.1	0.1	0.1
Inorganics (mg/kg)											
Mercury	0.030	0.030	0.030	0.030	0.030	0.030	0.040	0.020	0.020	0.020	0.020

Notes:

mg/kg - milligrams per kilogram

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Table B-5 -- Data Qualifier Notes

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

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Table B-6 -- Sediment Data Screening Assessment

Parameter Group	Analyte	FOD	FOD>10% (Yes/No)	Max Detect (mg/kg)[1]	Median (mg/kg)[1]	95% UCL (mg/kg)[1,2]	Statewide Default Soil Background Levels (mg/kg)					Consensus-Based TEC					Consensus-Based PEC					Ecological Screening Levels				
							Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]
Inorganics	Mercury	39/41 (95.1%)	Yes	6.0	0.17	2.1	0.13	56.1	46	1.3	16	0.18	49	33	0.94	12	1.1	27	5.7	0.16	2.0	0.174	49	34	0.98	12

Notes:

[1] Results rounded to 2-significant figures for presentation purposes..

[2] 95% UCLs generated using USEPA ProUCL (v. 4.1.01) software (USEPA, 2010). 95% UCL calculated only reported for constituents with at least 8 total observations and 5 detected observations (USEPA, 2009).

[3] Ratio of maximum detected concentration to screening level value.

[4] Ratio of median concentration to screening level value.

[5] Ratio of 95% UCL concentration to screening level value.

References:

MDEQ 2011. Revised Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels, Attachment 1. Tables 1, 2, and 3. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846_30022-251790--,00.html

USEPA 2003. Region 5, RCRA Ecological Screening Levels http://www.epa.gov/RCRIS-Region-5/ca/ESL.pdf via MDEQ 2006. RRD Operational Memorandum No. 4 Attachment 3- Sediments. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846-101581--,00.html

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Table B-7 -- Soil Data Screening Assessment

Parameter Group	Analyte	FOD	FOD>10% (Yes/No)	Max Detect (mg/kg)[1]	Median (mg/kg)[1]	95% UCL (mg/kg)[1,2]	Statewide Default Soil Background Levels (mg/kg)					Ecological Screening Levels (mg/kg)					Drinking Water Protection Criteria (mg/kg)					GSI Protection Criteria (mg/kg)				
							Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]
Inorganics	Mercury	129/142 (90.8%)	Yes	16	0.14	2.2	0.13	54.9	125	1.1	17	0.1	59.9	163	1.4	22	1.7	23.2	9.6	0.082	1.3	0.05	76.1	326	2.8	44

Notes:
[1] Results rounded to 2-significant figures for presentation purposes..
[2] 95% UCLs generated using USEPA ProUCL (v. 4.1.01) software (USEPA, 2010). 95% UCL calculated only reported for constituents with at least 8 total observations and 5 detected observations (USEPA, 2009).
[3] Ratio of maximum detected concentration to screening level value.
[4] Ratio of median concentration to screening level value.
[5] Ratio of 95% UCL concentration to screening level value.

References:
MDEQ 2011. Revised Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels, Attachment 1. Tables 1, 2, and 3. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846_30022-251790--,00.html
USEPA 2003. Region 5, RCRA Ecological Screening Levels http://www.epa.gov/RCRIS-Region-5/ca/ESL.pdf via MDEQ 2006. RRD Operational Memorandum No. 4 Attachment 3- Sediments. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846-101581--,00.html

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Attachment B - Mercury Data

Table B-7 -- Soil Data Screening Assessment

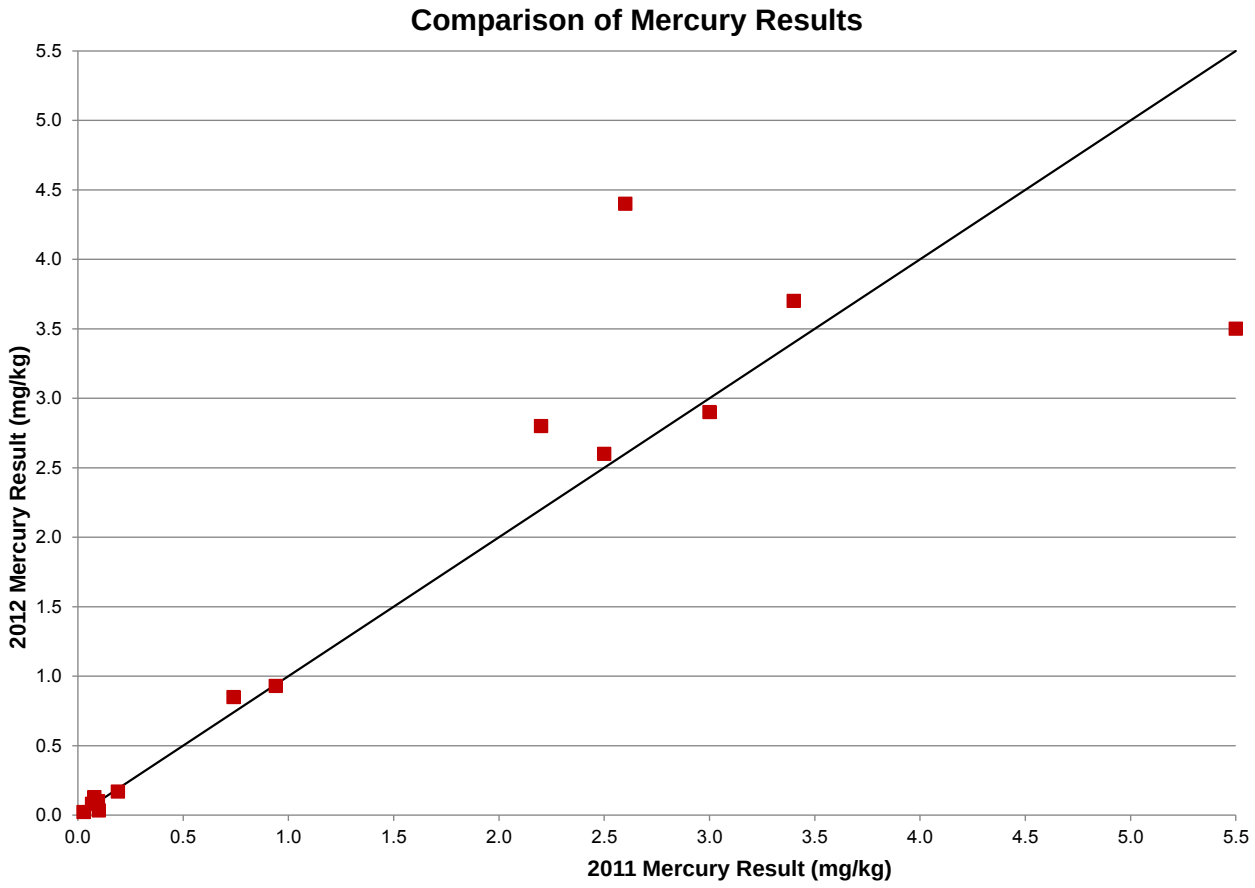
Parameter Group	Analyte	FOD	FOD>10% (Yes/No)	Groundwater Contact Protection Criteria (mg/kg)					Non-residential Drinking Water Protection Criteria (mg/kg)					Residential Direct Contact Criteria (mg/kg)					Commercial Direct Contact Criteria (mg/kg)				
				Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]	Screening Value (mg/kg)	Percent of Samples Exceeding	Max Concentration Quotient[3]	Median Concentration Quotient[4]	95% UCL Concentration Quotient[5]
Inorganics	Mercury	129/142 (90.8%)	Yes	47	0.0	0.35	0.0030	0.047	1.7	23.2	9.6	0.082	1.3	160	0.0	0.10	0.00088	0.014	580	0.0	0.028	0.00024	0.0038

Notes:
[1] Results rounded to 2-significant figures for presentation purposes..
[2] 95% UCLs generated using USEPA ProUCL (v. 4.1.01) software (USEPA, 2010). 95% UCL calculated only reported for constituents with at least 8 total observations and 5 detected observations (USEPA, 2009).
[3] Ratio of maximum detected concentration to screening level value.
[4] Ratio of median concentration to screening level value.
[5] Ratio of 95% UCL concentration to screening level value.

References:
MDEQ 2011. Revised Part 201 Cleanup Criteria and Part 213 Risk-based Screening Levels, Attachment 1. Tables 1, 2, and 3. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846_30022-251790--,00.html
USEPA 2003. Region 5, RCRA Ecological Screening Levels http://www.epa.gov/RCRIS-Region-5/ca/ESL.pdf via MDEQ 2006. RRD Operational Memorandum No. 4 Attachment 3- Sediments. http://www.michigan.gov/deq/0,1607,7-135-3311_4109_9846-101581--,00.html

ARCADIS

Figures



Note:
1. Non-detect results are reported as half the detection limit.

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Area 3 Proposed Survey and Field Sampling Plan

Comparison of Mercury Results for 2011 Area 2 Soil and Sediment Samples

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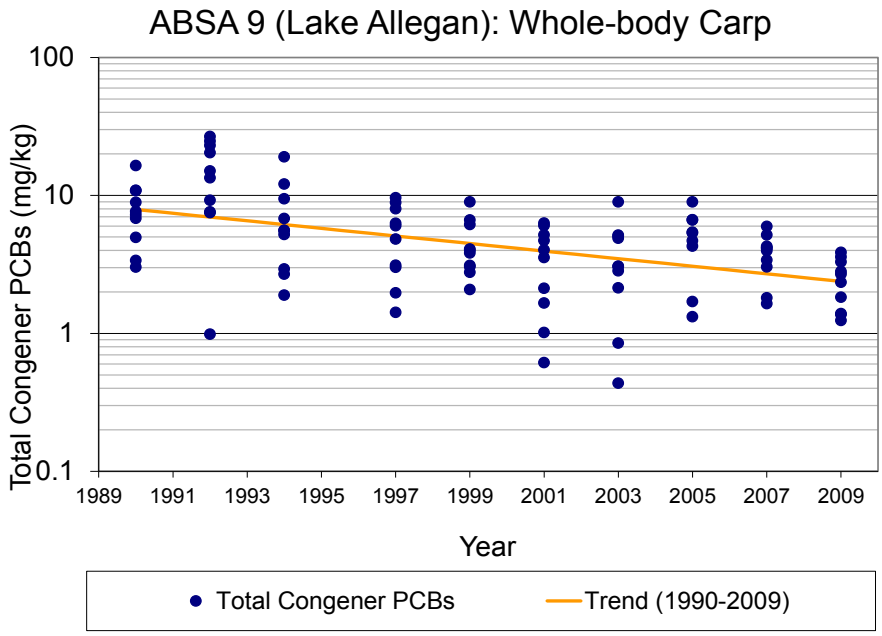
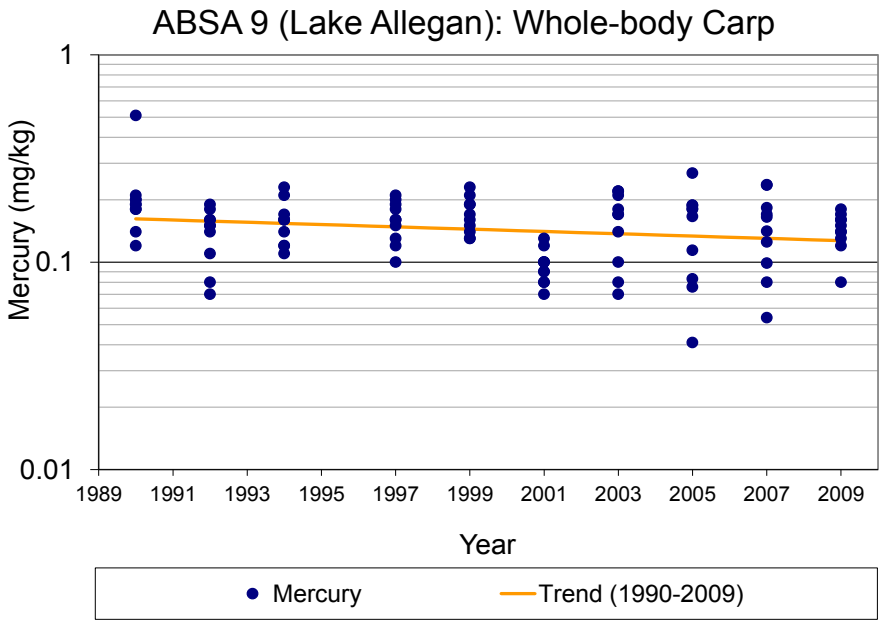
FIGURE B-1

G:\COMMON\64524\05 Correspondence\SRIFS KRSG Memos\2012 Area 3 Field Sampling Plan\Attachment B - Mercury Data\Figure B-1 2011 Area 2 Mercury MultiAnalyses.xlsx
Project Number: B0064531.0003.00500





Notes:
1. Non-detect values are counted as half the detection limit.

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Area 3 Proposed Survey and Field Sampling Plan

Lake Allegan Fish PCB and Mercury Data

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FIGURE
B-2